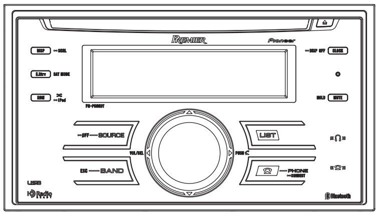
Pioneer sound.vision.soul

Service Manual


FH-P800BT/XJ/UC

ORDER NO.
CRT4134

CD RECEIVER

FH-P800BT/XJ/UC

FH-P8000BT/XJ/UC

CD RDS RECEIVER

FH-P80BT/XJ/EW5

CD RECEIVER

FH-P6050UB/XJ/ES

This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech.Module	Remarks
CX-3240	CRT4050	S10.5COMP2-iPod/USB	CD Mech. Module : Circuit Descriptions, Mech. Descriptions, Disassembly

For details, refer to "Important Check Points for Good Servicing".

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SAFETY INFORMATION

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.
Health & Safety Code Section 25249.6 - Proposition 65

Where in a manufacturer's service documentation, for example in circuit diagrams or lists of components, a symbol is used to indicate that a specific component shall be replaced only by the component specified in that documentation for safety reasons, the following symbol shall be used:

⚠

● Safety Precautions for those who Service this Unit.

- **When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.**

Caution:

1. **During repair or tests, minimum distance of 13 cm from the focus lens must be kept.**
2. **During repair or tests, do not view laser beam for 10 seconds or longer.**

CAUTION:
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

CAUTION
This product contains a laser diode of higher class than 1. To ensure continued safety, do not remove any covers or attempt to gain access to the inside of the product.
Refer all servicing to qualified personnel.

CLASS 1
LASER PRODUCT

En

WARNING!

The AEL (accessible emission level)of the laser power output is less than CLASS 1 but the laser component is capable of emitting radiation exceeding the limit for CLASS 1.
A specially instructed person should do servicing operation of the apparatus.

Laser diode characteristics

Wave length : 785 nm to 814 nm

Maximum output : 1 190 W(Emitting period : unlimited)

Additional Laser Caution

Transistors Q101 in PCB drive the laser diodes.
When Q101 is shorted between their terminals, the laser diodes will radiate beam.
If the top cover is removed with no disc loaded while such short-circuit is continued, the naked eyes may be exposed to the laser beam.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replaced only with the same or equivalent type recommended by the manufacture.
Discord used batteries according to the manufacture's instructions.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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1. SERVICE PRECAUTIONS

1.1 SERVICE PRECAUTIONS

1. You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.
2. Before disassembling the unit, be sure to turn off the power. Unplugging and plugging the connectors during power-on mode may damage the ICs inside the unit.
3. To protect the pickup unit from electrostatic discharge during servicing, take an appropriate treatment (shorting-solder) by referring to "the DISASSEMBLY".
4. After replacing the pickup unit, be sure to check the grating.
5. Be careful in handling ICs. Some ICs such as MOS type are so fragile that they can be damaged by electrostatic induction.

Display of mis-installing CD mechanism

This machine is an installing model of S10.5COMP2-iPod-C2 mechanism.
When you install the S10.5COMP2-USB mechanism by mistake
It becomes the following error display by the CDS USB source.

CHK CDCORE

1.2 NOTES ON SOLDERING

- For environmental protection, lead-free solder is used on the printed circuit boards mounted in this unit. Be sure to use lead-free solder and a soldering iron that can meet specifications for use with lead-free solders for repairs accompanied by reworking of soldering.

- Compared with conventional eutectic solders, lead-free solders have higher melting points, by approximately 40 °C. Therefore, for lead-free soldering, the tip temperature of a soldering iron must be set to around 373 °C in general, although the temperature depends on the heat capacity of the PC board on which reworking is required and the weight of the tip of the soldering iron.

Compared with eutectic solders, lead-free solders have higher bond strengths but slower wetting times and higher melting temperatures (hard to melt/easy to harden).

The following lead-free solders are available as service parts:
- Parts numbers of lead-free solder:
  GYP1006 1.0 in dia.
  GYP1007 0.6 in dia.
  GYP1008 0.3 in dia.

2. SPECIFICATIONS

2.1 SPECIFICATIONS

FH-P800BT/XJ/UC, FH-P8000BT/XJ/UC

General

Power source	14.4 V DC (10.8 V to 15.1 V allowable)
Grounding system	Negative type
Max. current consumption	10.0 A
Backup current	3.3 mA to 3.4 mA
Dimensions (W × H × D):	
D	
Chassis	178 mm × 100 mm × 160 mm (7 in.× 3-7/8 in.× 6-1/4 in.)
Nose	170 mm × 94 mm × 8 mm (6-3/4 in.× 3-3/4 in.× 3/8 in.)
Weight	1.8 kg (4 lbs)

Audio

Maximum power output	50 W × 4 50 W × 2/4 Ω + 70 W × 1/2 Ω (for subwoofer)
Continuous power output	22 W × 4 (50 Hz to 15 000 Hz, 5% THD, 4 Ω load, both channels driven)
Load impedance	4 Ω to 8 Ω × 4 4 Ω to 8 Ω × 2 + 2 Ω × 1
Preout max output level	4 V
Equalizer (7-Band Graphic Equalizer):	
Frequency	50/125/315/800/2k/5k/12.5k Hz
Gain	±12 dB
HPF:	
Frequency	50/63/80/100/125 Hz
Slope	–12 dB/oct
Subwoofer (mono):	
Frequency	50/63/80/100/125 Hz
Slope	–18 dB/oct
Gain	+6 dB to –24 dB
Phase	Normal/Reverse
Bass boost:	
Gain	+12 dB to 0 dB

CD player

System	Compact disc audio system
Usable discs	Compact disc
Signal-to-noise ratio	94 dB (1 kHz) (IHF-A network)
Number of channels	2 (stereo)
MP3 decoding format	MPEG-1 & 2 Audio Layer 3
WMA decoding format	Ver. 7, 7.1, 8, 9, 10, 11 (2ch audio) (Windows Media Player)
AAC decoding format	MPEG-4 AAC (iTunes® encoded only) (.m4a) (Ver. 7.2 and earlier)
WAV signal format	Linear PCM & MS ADPCM (Non-compressed)

USB

Specification	USB 2.0 full speed
Supply current	500 mA
Maximum amount of memory	250 GB
File system	FAT16, FAT32
MP3 decoding format	MPEG-1 & 2 Audio Layer 3
WMA decoding format	Ver. 7, 7.1, 8, 9, 10, 11 (2ch audio) (Windows Media Player)
AAC decoding format	MPEG-4 AAC (iTunes® encoded only) (.m4a) (Ver. 7.2 and earlier)
WAV signal format	Linear PCM & MS ADPCM (Non-compressed)

FM tuner

Frequency range	87.9 MHz to 107.9 MHz
Usable sensitivity	8 dBf (0.7 µV/75 Ω, mono, S/N: 30 dB)
Signal-to-noise ratio	75 dB (IHF-A network)

AM tuner

Frequency range	530 kHz to 1 710 kHz (10 kHz)
Usable sensitivity	18 µV (S/N: 20 dB)
Signal-to-noise ratio	65 dB (IHF-A network)

Bluetooth

Version	Bluetooth 2.0 certified

CEA2006 Specifications

Power output	14 W RMS × 4 Channels (4 Ω and ≦ 1 % THD+N)
S/N ratio	91 dBA (reference: 1 W into 4 Ω)

Note

Specifications and the design are subject to modifications without notice due to improvements. ■

General

Power source	14.4 V DC (12.0 V to 14.4 V allowable)
Grounding system	Negative type
Max. current consumption	10.0 A
Backup current	3.3 mA to 3.4 mA
Dimensions (W × H × D):	
DIN	
Chassis	178 mm × 100 mm × 152 mm
Nose	188 mm × 118 mm × 16 mm
D	
Chassis	178 mm × 100 mm × 160 mm
Nose	170 mm × 94 mm × 8 mm
Weight	1.8 kg

Audio

Maximum power output	50 W × 4 50 W × 2/4 Ω + 70 W × 1/2 Ω (for subwoofer)
Continuous power output	22 W × 4 (50 Hz to 15 000 Hz, 5% THD, 4 Ω load, both channels driven)
Load impedance	4 Ω to 8 Ω × 4 4 Ω to 8 Ω × 2 + 2 Ω × 1
Preout max output level	4 V
Equalizer (7-Band Graphic Equalizer):	
Frequency	50/125/315/800/2k/5k/12.5k Hz
Gain	±12 dB
HPF:	
Frequency	50/63/80/100/125 Hz
Slope	–12 dB/oct
Subwoofer (mono):	
Frequency	50/63/80/100/125 Hz
Slope	–18 dB/oct
Gain	+6 dB to –24 dB
Phase	Normal/Reverse
Bass boost:	
Gain	+12 dB to 0 dB

CD player

System	Compact disc audio system
Usable discs	Compact disc
Signal-to-noise ratio	94 dB (1 kHz) (IEC-A network)
Number of channels	2 (stereo)
MP3 decoding format	MPEG-1 & 2 Audio Layer 3
WMA decoding format	Ver. 7, 7.1, 8, 9, 10, 11 (2ch audio) (Windows Media Player)
AAC decoding format	MPEG-4 AAC (iTunes® encoded only) (.m4a) (Ver. 7.2 and earlier)
WAV signal format	Linear PCM & MS ADPCM (Non-compressed)

USB

Specification	USB 2.0 full speed
Supply current	500 mA
Maximum amount of memory	250 GB
File system	FAT16, FAT32
MP3 decoding format	MPEG-1 & 2 Audio Layer 3
WMA decoding format	Ver. 7, 7.1, 8, 9, 10, 11 (2ch audio) (Windows Media Player)
AAC decoding format	MPEG-4 AAC (iTunes® encoded only) (.m4a) (Ver. 7.2 and earlier)
WAV signal format	Linear PCM & MS ADPCM (Non-compressed)

FM tuner

Frequency range	87.5 MHz to 108.0 MHz
Usable sensitivity	8 dBf (0.7 µV/75 Ω, mono, S/N: 30 dB)
Signal-to-noise ratio	75 dB (IEC-A network)

MW tuner

Frequency range	531 kHz to 1 602 kHz (9 kHz)
Usable sensitivity	18 µV (S/N: 20 dB)
Signal-to-noise ratio	65 dB (IEC-A network)

LW tuner

Frequency range	153 kHz to 281 kHz
Usable sensitivity	30 µV (S/N: 20 dB)
Signal-to-noise ratio	65 dB (IEC-A network)

Bluetooth

Version	Bluetooth 2.0 certified
Output power	+4 dBm Max. (Power class 2)

Note

Specifications and the design are subject to modifications without notice due to improvements. ■

General

Power source	14.4 V DC (12.0 V to 14.4 V allowable)
Grounding system	Negative type
Max. current consumption	10.0 A
Backup current	3.3 mA to 3.4 mA
Dimensions (W × H × D):	
D	
Chassis	178 mm × 100 mm × 160 mm
Nose	170 mm × 94 mm × 8 mm
Weight	1.7 kg

Audio

Maximum power output	50 W × 4 50 W × 2/4 Ω + 70 W × 1/2 Ω (for subwoofer)
Continuous power output	22 W × 4 (50 Hz to 15 000 Hz, 5% THD, 4 Ω load, both channels driven)
Load impedance	4 Ω to 8 Ω × 4 4 Ω to 8 Ω × 2 + 2 Ω × 1
Preout max output level	4 V
Equalizer (7-Band Graphic Equalizer):	
Frequency	50/125/315/800/2k/5k/12.5k Hz
Gain	±12 dB
HPF:	
Frequency	50/63/80/100/125 Hz
Slope	–12 dB/oct
Subwoofer (mono):	
Frequency	50/63/80/100/125 Hz
Slope	–18 dB/oct
Gain	+6 dB to –24 dB
Phase	Normal/Reverse
Bass boost:	
Gain	+12 dB to 0 dB

CD player

System	Compact disc audio system
Usable discs	Compact disc
Signal-to-noise ratio	94 dB (1 kHz) (IEC-A network)
Number of channels	2 (stereo)
MP3 decoding format	MPEG-1 & 2 Audio Layer 3
WMA decoding format	Ver. 7, 7.1, 8, 9, 10, 11 (2ch audio) (Windows Media Player)
AAC decoding format	MPEG-4 AAC (iTunes® encoded only) (.m4a) (Ver. 7.2 and earlier)
WAV signal format	Linear PCM & MS ADPCM (Non-compressed)

USB

Specification	USB 2.0 full speed
Supply current	500 mA
Maximum amount of memory	250 GB
File system	FAT16, FAT32
MP3 decoding format	MPEG-1 & 2 Audio Layer 3
WMA decoding format	Ver. 7, 7.1, 8, 9, 10, 11 (2ch audio) (Windows Media Player)
AAC decoding format	MPEG-4 AAC (iTunes® encoded only) (.m4a) (Ver. 7.2 and earlier)
WAV signal format	Linear PCM & MS ADPCM (Non-compressed)

FM tuner

Frequency range	87.5 MHz to 108.0 MHz
Usable sensitivity	8 dBf (0.7 µV/75 Ω, mono, S/N: 30 dB)
Signal-to-noise ratio	75 dB (IEC-A network)

AM tuner

Frequency range	531 kHz to 1 602 kHz (9 kHz) 530 kHz to 1 640 kHz (10 kHz)
Usable sensitivity	18 µV (S/N: 20 dB)
Signal-to-noise ratio	65 dB (IEC-A network)

Infrared remote control

Wavelength	940 nm ±50 nm
Output	typ; 12 mw/sr per Infrared LED

Note

Specifications and the design are subject to modifications without notice due to improvements.

2.2 DISC/CONTENT FORMAT

COMPACT disc DIGITAL AUDIO

COMPACT disc DIGITAL AUDIO TEXT

Plays Windows Media™

SAT RADIO READY

Bluetooth®

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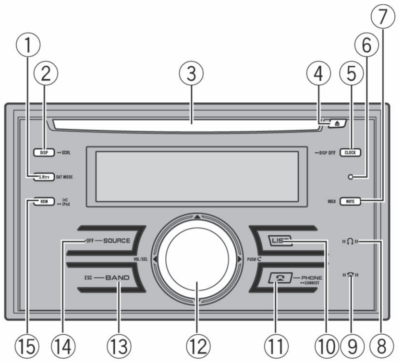
2.3 PANEL FACILITIES

FH-P800BT/XJ/UC, FH-P8000BT/XJ/UC, FH-P80BT/XJ/EW5

What's What

Head unit



① **S.Rtrv/SAT MODE button (UC)**
Press to switch Sound Retriever settings.
When XM tuner or SIRIUS tuner is selected as the source, press to change the channel select mode.
When SIRIUS tuner is selected as the source, press and hold to perform the Instant Replay mode.

① **S.Rtrv button (EW5)**
Press to switch Sound Retriever settings.

② **DISP/SCROLL button**
Press to select different displays.
Press and hold to scroll through the text information.

③ **Disc loading slot**
Insert a disc to play.

④ **EJECT button**
Press to eject a CD from your built-in CD player.

⑤ **CLOCK/DISP OFF button (UC)**
Press to change to the clock display.
Press and hold to turn the display indication and button illumination off or on.

⑤ **TA/NEWS button (EW5)**
Press to turn TA function on or off. Press and hold to turn NEWS function on or off.

⑥ **RESET button**
Press to reset the microprocessor.

⑦ **MUTE/HOLD button**
Press to turn off the sound. To turn on the sound, press again.
While talking on the phone, press to put the call on hold.

⑧ **“🎧” indicator**
Lights up when your Bluetooth audio player is connected via Bluetooth wireless technology.
- While connecting, this indicator flashes.

⑨ **“☎” indicator**
Lights up when your cellular phone is connected via Bluetooth wireless technology.
- While connecting, this indicator flashes.
- While phone connection is not completed, this indicator flashes.

⑩ **LIST button**
Press to display the disc title list, track title list, folder list, file list, preset channel list or phone number list depending on the source.

⑪ **PHONE/☎/CONNECT button**
Press to select the phone as the source.
While operating a phone source, press to end a call, reject an incoming call or cancel making a call.
Press and hold to perform Bluetooth connection.

⑫ **MULTI-CONTROL**
Move to perform manual seek tuning, fast forward, reverse and track search controls.
Also used for controlling functions.
Turn to increase or decrease the volume.

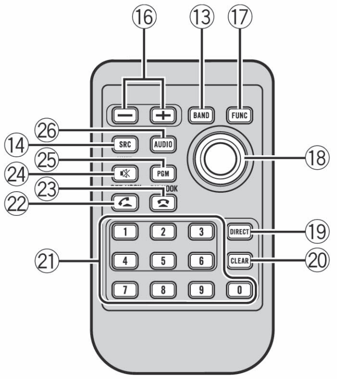
⑬ **BAND/ESC button**
Press to select among three FM bands and one AM band.
Press to return to the ordinary display when operating the menu.

⑭ **SOURCE/OFF button**
This unit is turned on by selecting a source.
Press to cycle through all the available sources.

⑮ **RDM/🔀/iPod button**
Press to turn random function on or off while using CD or USB.
While using an iPod, press to shuffle all tracks.
Press and hold to switch the control mode while using an iPod.
If using the iPod with an interface adapter (CD-IB100Ⅱ), press to switch the shuffle function.

Remote control

Operation is the same as when using the buttons on the head unit.



⑯ **VOLUME buttons**
Press to increase or decrease the volume.

⑰ **FUNCTION button**
Press to select functions.

⑱ **Thumb pad**
Move to perform manual seek tuning, fast forward, reverse and track search controls. Also used for controlling functions.
Functions are the same as **MULTI-CONTROL** except for volume control.
Press to display the disc title list, track title list, folder list, file list or preset channel list depending on the source.

⑲ **DIRECT button**
Press to directly select the desired track.

⑳ **CLEAR button**
Press to cancel the input number when **0** to **9** are used.

㉑ **0 to 9 buttons**
Press to directly select the desired track, preset tuning or disc. Buttons **1** to **6** can operate the preset tuning for the tuner or disc number search for the multi-CD player.

㉒ **OFF HOOK button**
Press to start talking on the phone while operating a phone source.

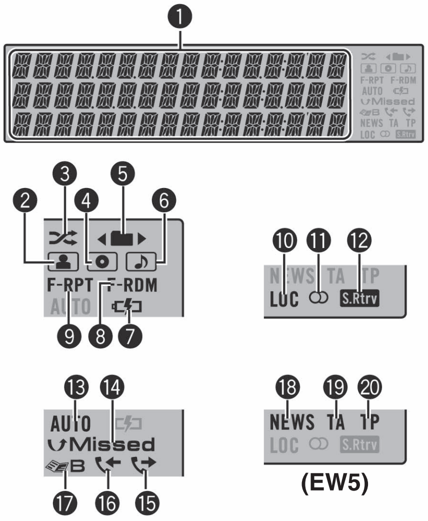
㉓ **ON HOOK button**
While operating the phone source, press to end a call or reject an incoming call.

㉔ **MUTE button**
Press to turn off the sound. To turn on the sound, press again.

㉕ **PGM button**
Press to operate the preprogrammed functions for each source.

㉖ **AUDIO button**
Press to select various sound quality controls.

Display indication



① **Main display section**
Displays band, frequency, elapsed playback time and other settings.

② **(artist) indicator**
Appears when the disc (track) artist name is displayed on the main display section.
Appears when artist search refinement on the iPod browsing function is in use.

③ **(shuffle) indicator**
Appears when shuffle function is on while iPod source is being selected.

④ **(disc) indicator**
Appears when the disc (album) name is displayed on the main display section.
Appears when album search refinement on the iPod browsing function is in use.

⑤ **◀■▶ (folder) indicator**
Appears when operating list function.
When an upper tier folder or menu exists, ◀ appears.
When a lower tier folder or menu exists, ▶ appears.

⑥ **♪ (song) indicator**
Appears when the track (song) name is displayed on the main display section.
Appears when song search refinement on the iPod browsing function is in use.

⑦ **(iPod connection) indicator**
Appears when the iPod connection is recognized while USB source is being selected.

⑧ **F-RDM indicator**
Appears when folder random is on.
When random function is on, only **RDM** is displayed.

⑨ **F-RPT indicator**
Appears when folder repeat is on.
When repeat function is on, only **RPT** is displayed.

⑩ **LOC indicator**
Appears when local seek tuning is on.

⑪ **(stereo) indicator**
Appears when the selected frequency is being broadcast in stereo.

⑫ **S.Rtrv (Sound Retriever) indicator**
Appears when Sound Retriever function is on.

⑬ **AUTO (auto answer) indicator**
Shows when the automatic answering function is on .

⑭ **Missed (missed call) indicator**
Appears when there are missed call log.
Appears when missed call list is displayed while telephone source is being selected.

⑮ **(dialled call) indicator**
Appears when dialled call list is displayed while telephone source is being selected.

⑯ **(received call) indicator**
Appears when received call list is displayed while telephone source is being selected.

⑰ **B (phone book) indicator**
Appears when phone book list is displayed while telephone source is being selected.

⑱ **NEWS indicator (EW5)**
Appears when NEWS (news program interruption) function is on.

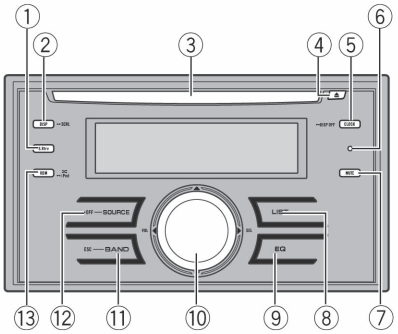
⑲ **TA indicator (EW5)**
Appears when TA (traffic announcement standby) function is on.

⑳ **TP indicator (EW5)**
Appears when a TP station is tuned in. ■

FH-P6050UB/XJ/ES

What's What

Head unit



① **S.Rtrv button**
Press to switch Sound Retriever settings.

② **DISP/SCROLL button**
Press to select different displays.
Press and hold to scroll through the text information.

③ **Disc loading slot**
Insert a disc to play.

④ **EJECT button**
Press to eject a CD from your built-in CD player.

⑤ **CLOCK/DISP OFF button**
Press to change to the clock display.
Press and hold to turn the display indication and button illumination off or on.

⑥ **RESET button**
Press to reset the microprocessor.

⑦ **MUTE button**
Press to turn off the sound. To turn on the sound, press again.

⑧ **LIST button**
Press to display the disc title list, track title list, folder list, file list or preset channel list depending on the source.

⑨ **EQ button**
Press to select various equalizer curves.

⑩ **MULTI-CONTROL**
Move to perform manual seek tuning, fast forward, reverse and track search controls.
Also used for controlling functions.
Turn to increase or decrease the volume.

⑪ **BAND/ESC button**
Press to select among three FM bands and one AM band.
Press to return to the ordinary display when operating the menu.

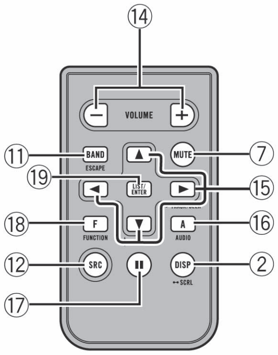
⑫ **SOURCE/OFF button**
This unit is turned on by selecting a source.
Press to cycle through all the available sources.

⑬ **RDM/⤮/iPod button**
Press to turn random function on or off while using CD or USB.
While using an iPod, press to shuffle all tracks.
Press and hold to switch the control mode while using an iPod.
If using the iPod with an interface adapter (CD-IB100Ⅱ), press to switch the shuffle function.

FH-P6050UB/XJ/ES

Remote control

Operation is the same as when using the buttons on the head unit.


⑭
⑪
⑲
⑦
⑮
⑱
⑯
⑫
②
⑰
VOLUME
BAND
ESCAPE
MUTE
LIST/ENTER
F
FUNCTION
A
AUDIO
SRC
DISP
SCRL

⑭ **VOLUME buttons**
Press to increase or decrease the volume.

⑮ **▲/▼/◄/► buttons**
Press to perform manual seek tuning, fast forward, reverse and track search controls. Also used for controlling functions.

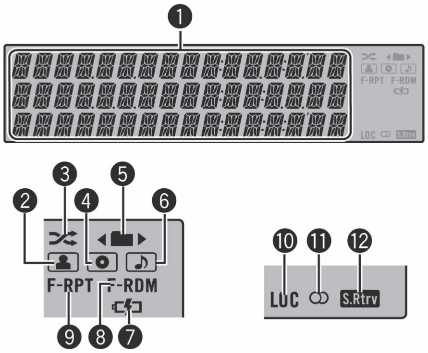
⑯ **AUDIO button**
Press to select an audio function.

⑰ **❚❚ (pause) button**
Press to turn pause on or off.

⑱ **FUNCTION button**
Press to select functions.

⑲ **LIST/ENTER button**
Press to display the disc title list, track title list, folder list, file list or preset channel list depending on the source.
While in the operating menu, press to control functions.

Display indication



❶ **Main display section**
Displays band, frequency, elapsed playback time and other settings.

❷ **👤 (artist) indicator**
Appears when the disc (track) artist name is displayed on the main display section.
Appears when artist search refinement on the iPod browsing function is in use.

❸ **🔀 (shuffle) indicator**
Appears when shuffle function is on while iPod source is being selected.

❹ **⊙ (disc) indicator**
Appears when the disc (album) name is displayed on the main display section.
Appears when album search refinement on the iPod browsing function is in use.

❺ **◀■▶ (folder) indicator**
Appears when operating list function.
When an upper tier folder or menu exists, ◀ appears.
When a lower tier folder or menu exists, ▶ appears.

❻ **♪ (song) indicator**
Appears when the track (song) name is displayed on the main display section.
Appears when song search refinement on the iPod browsing function is in use.

❼ **(iPod connection) indicator**
Appears when the iPod connection is recognized while USB source is being selected.

❽ **F-RDM indicator**
Appears when folder random is on.
When random function is on, only **RDM** is displayed.

❾ **F-RPT indicator**
Appears when folder repeat is on.
When repeat function is on, only **RPT** is displayed.

❿ **LOC indicator**
Appears when local seek tuning is on.

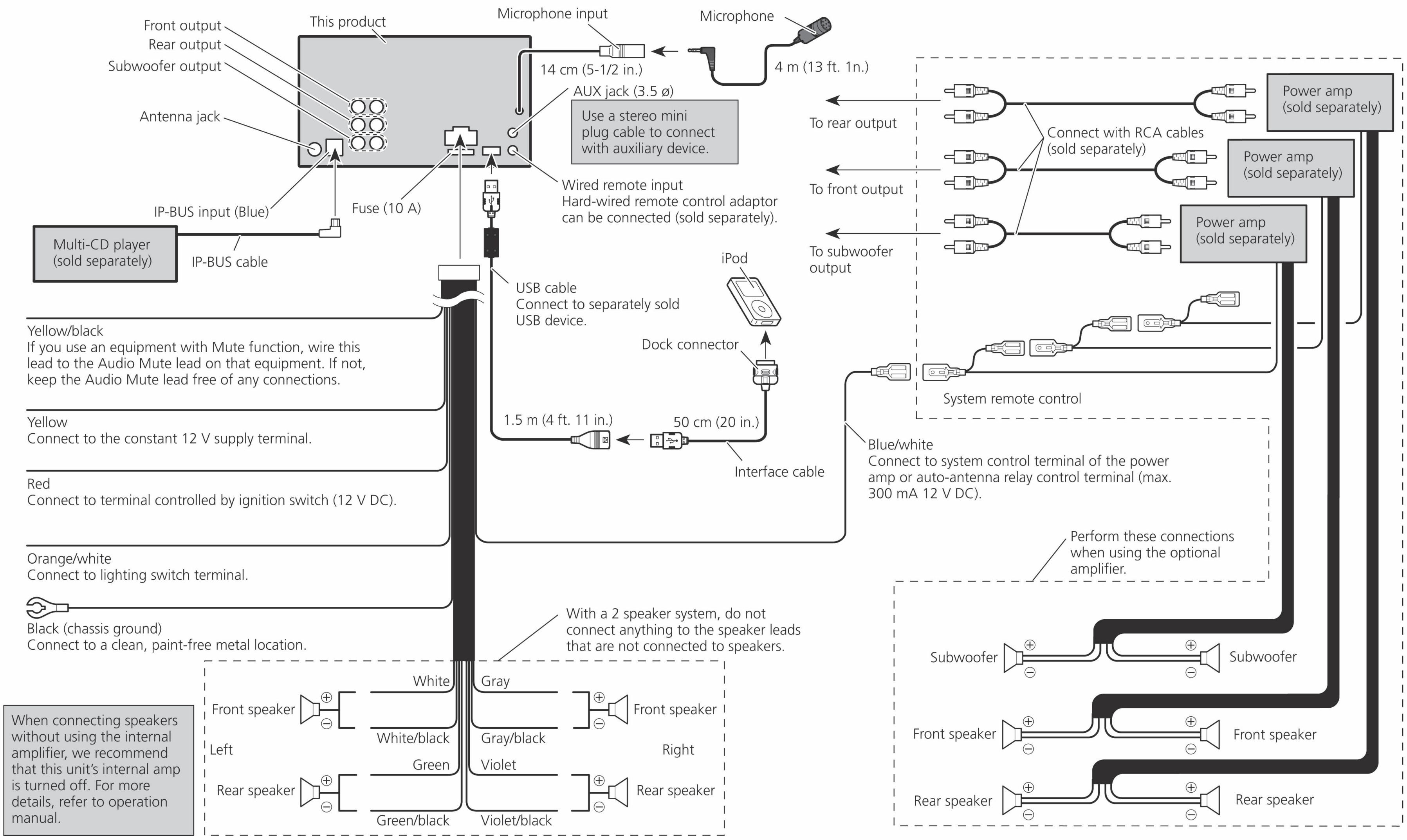
⓫ **ↀ (stereo) indicator**
Appears when the selected frequency is being broadcast in stereo.

⓬ **S.Rtrv (Sound Retriever) indicator**
Appears when Sound Retriever function is on. ■

2.4 CONNECTION DIAGRAM

FH-P800BT/XJ/UC

When not connecting a rear speaker lead to a subwoofer


Front output
Rear output
Subwoofer output
Antenna jack
This product
Microphone input
Microphone
14 cm (5-1/2 in.)
4 m (13 ft. 1n.)
AUX jack (3.5 ø)
IP-BUS input (Blue)
Fuse (10 A)
Multi-CD player (sold separately)
IP-BUS cable
iPod
Dock connector
1.5 m (4 ft. 11 in.)
50 cm (20 in.)
Interface cable
To rear output
To front output
To subwoofer output
Connect with RCA cables (sold separately)
Power amp (sold separately)
Power amp (sold separately)
Power amp (sold separately)
System remote control
Subwoofer
Subwoofer
Front speaker
Front speaker
Rear speaker
Rear speaker
White
Gray
White/black
Gray/black
Green
Violet
Green/black
Violet/black
Front speaker
Left
Rear speaker
Front speaker
Right
Rear speaker

Use a stereo mini plug cable to connect with auxiliary device.

Wired remote input
Hard-wired remote control adaptor can be connected (sold separately).

USB cable
Connect to separately sold USB device.

Blue/white
Connect to system control terminal of the power amp or auto-antenna relay control terminal (max. 300 mA 12 V DC).

Perform these connections when using the optional amplifier.

Yellow/black
If you use an equipment with Mute function, wire this lead to the Audio Mute lead on that equipment. If not, keep the Audio Mute lead free of any connections.

Yellow
Connect to the constant 12 V supply terminal.

Red
Connect to terminal controlled by ignition switch (12 V DC).

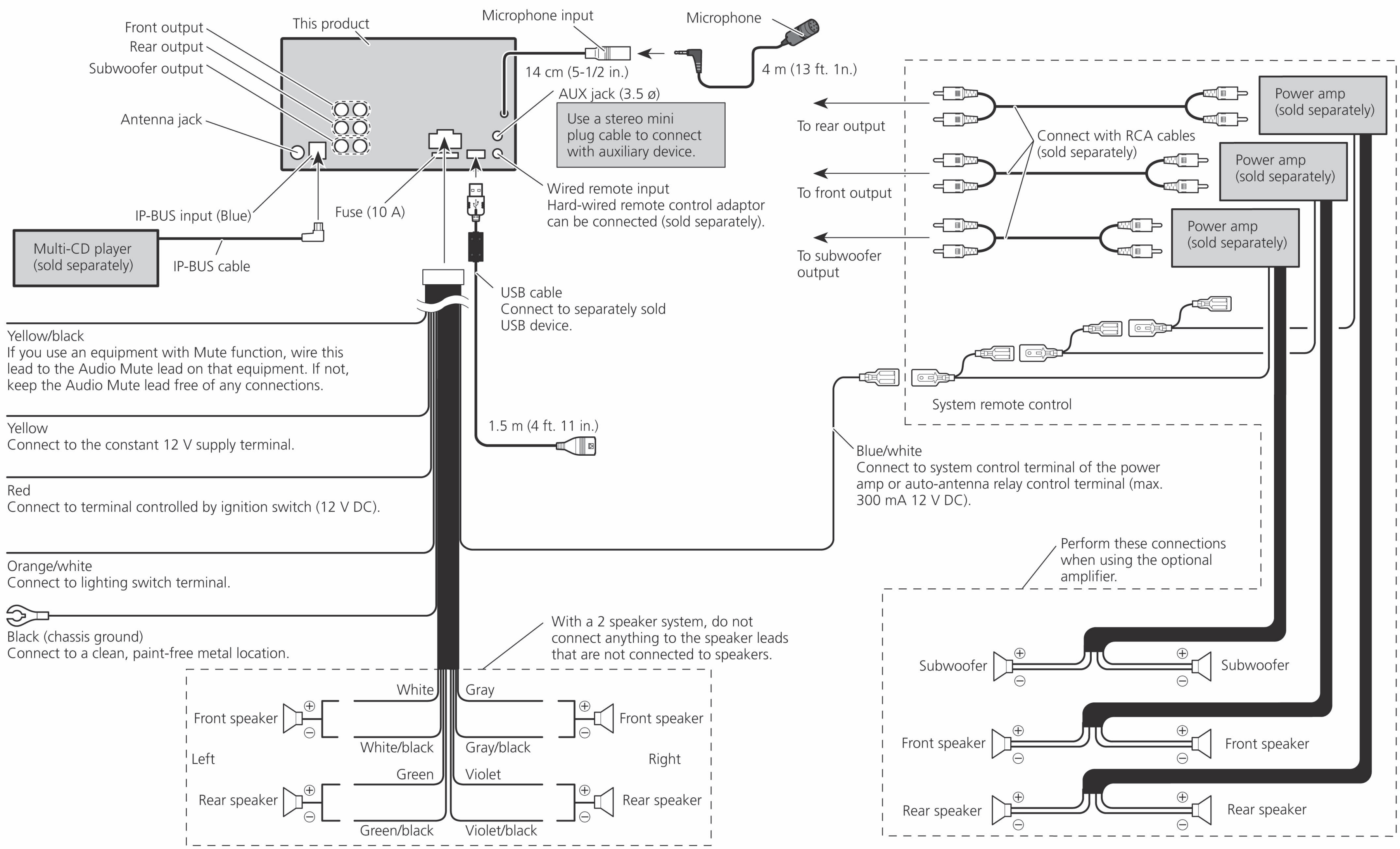
Orange/white
Connect to lighting switch terminal.

Black (chassis ground)
Connect to a clean, paint-free metal location.

With a 2 speaker system, do not connect anything to the speaker leads that are not connected to speakers.

When connecting speakers without using the internal amplifier, we recommend that this unit's internal amp is turned off. For more details, refer to operation manual.

When not connecting a rear speaker lead to a subwoofer


Front output
Rear output
Subwoofer output
Antenna jack
This product
Microphone input
Microphone
14 cm (5-1/2 in.)
4 m (13 ft. 1n.)
AUX jack (3.5 ø)
IP-BUS input (Blue)
Fuse (10 A)
Multi-CD player (sold separately)
IP-BUS cable
1.5 m (4 ft. 11 in.)
To rear output
To front output
To subwoofer output
Connect with RCA cables (sold separately)
Power amp (sold separately)
Power amp (sold separately)
Power amp (sold separately)
System remote control
White
White/black
Green
Green/black
Gray
Gray/black
Violet
Violet/black
Front speaker
Rear speaker
Left
Front speaker
Rear speaker
Right
Subwoofer
Subwoofer
Front speaker
Front speaker
Rear speaker
Rear speaker

Use a stereo mini plug cable to connect with auxiliary device.

Wired remote input
Hard-wired remote control adaptor can be connected (sold separately).

USB cable
Connect to separately sold USB device.

Yellow/black
If you use an equipment with Mute function, wire this lead to the Audio Mute lead on that equipment. If not, keep the Audio Mute lead free of any connections.

Yellow
Connect to the constant 12 V supply terminal.

Red
Connect to terminal controlled by ignition switch (12 V DC).

Orange/white
Connect to lighting switch terminal.

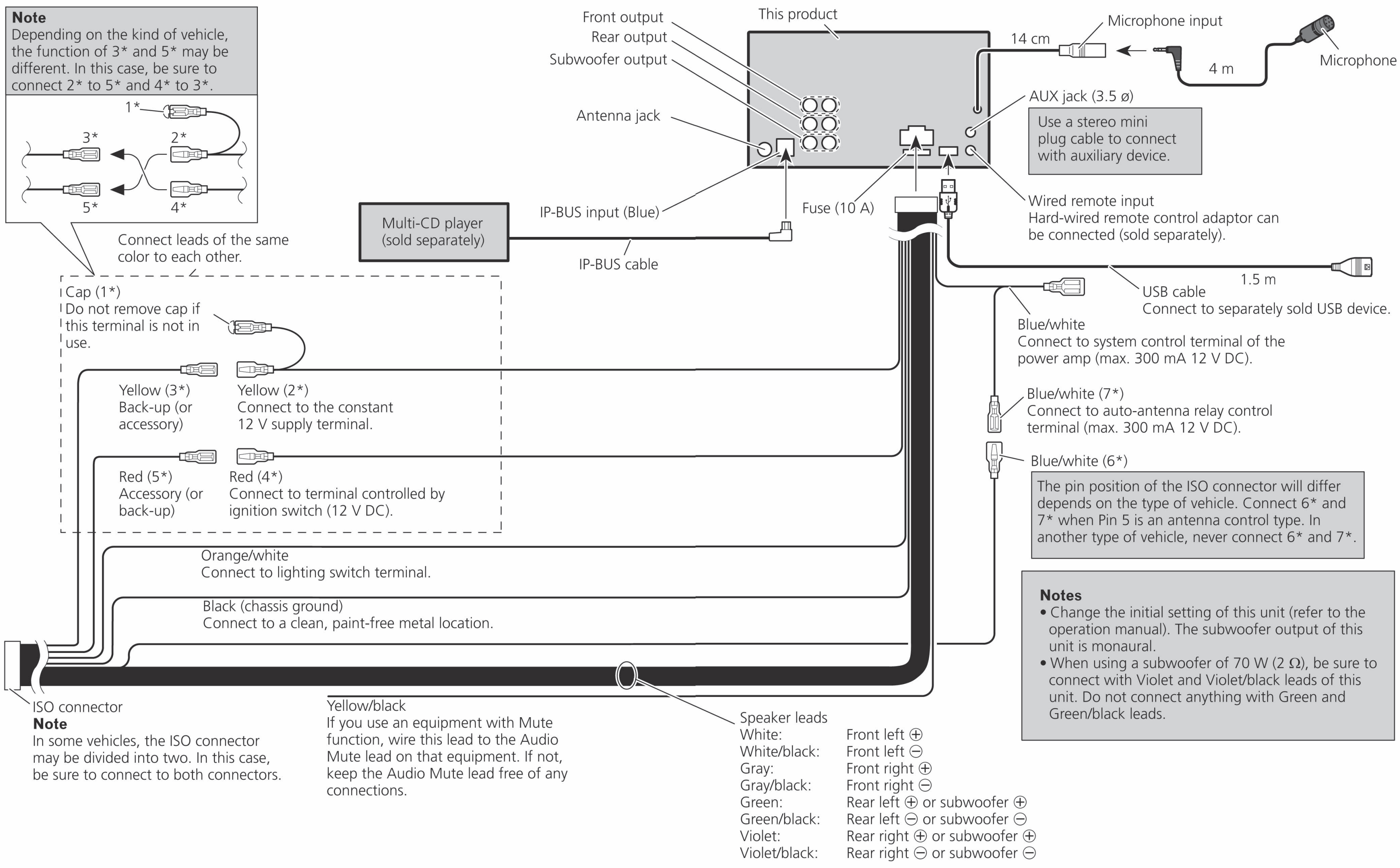
Black (chassis ground)
Connect to a clean, paint-free metal location.

Blue/white
Connect to system control terminal of the power amp or auto-antenna relay control terminal (max. 300 mA 12 V DC).

Perform these connections when using the optional amplifier.

With a 2 speaker system, do not connect anything to the speaker leads that are not connected to speakers.

Power cable connection



Note
Depending on the kind of vehicle, the function of 3* and 5* may be different. In this case, be sure to connect 2* to 5* and 4* to 3*.

Connect leads of the same color to each other.

Cap (1*)
Do not remove cap if this terminal is not in use.

Yellow (3*)
Back-up (or accessory)

Yellow (2*)
Connect to the constant 12 V supply terminal.

Red (5*)
Accessory (or back-up)

Red (4*)
Connect to terminal controlled by ignition switch (12 V DC).

Orange/white
Connect to lighting switch terminal.

Black (chassis ground)
Connect to a clean, paint-free metal location.

ISO connector
Note
In some vehicles, the ISO connector may be divided into two. In this case, be sure to connect to both connectors.

Yellow/black
If you use an equipment with Mute function, wire this lead to the Audio Mute lead on that equipment. If not, keep the Audio Mute lead free of any connections.

Multi-CD player (sold separately)

Front output
Rear output
Subwoofer output
Antenna jack
IP-BUS input (Blue)
IP-BUS cable
This product
Fuse (10 A)

Microphone input
Microphone

AUX jack (3.5 ø)
Use a stereo mini plug cable to connect with auxiliary device.

Wired remote input
Hard-wired remote control adaptor can be connected (sold separately).

USB cable
Connect to separately sold USB device.

Blue/white
Connect to system control terminal of the power amp (max. 300 mA 12 V DC).

Blue/white (7*)
Connect to auto-antenna relay control terminal (max. 300 mA 12 V DC).

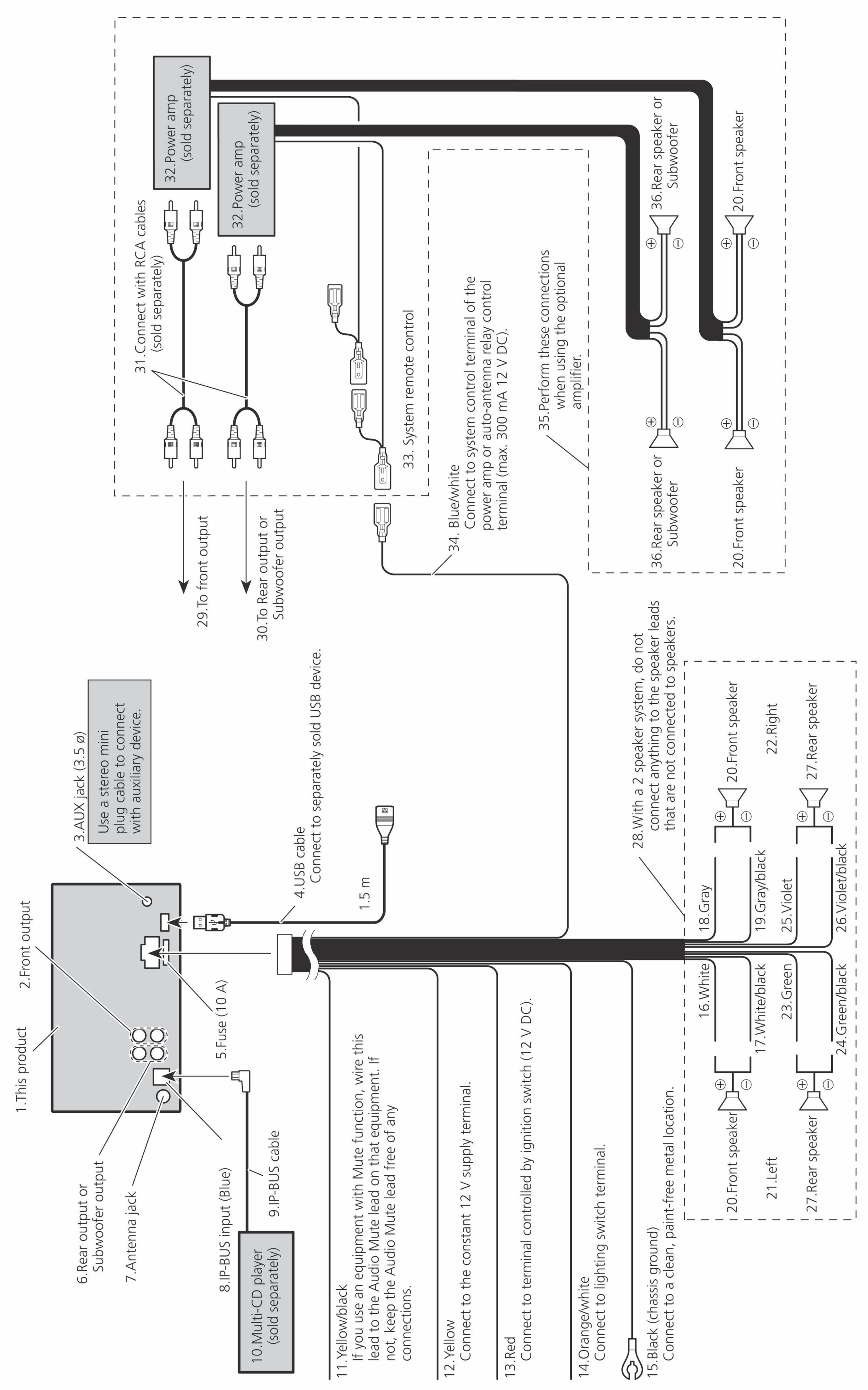
Blue/white (6*)

The pin position of the ISO connector will differ depends on the type of vehicle. Connect 6* and 7* when Pin 5 is an antenna control type. In another type of vehicle, never connect 6* and 7*.

Notes
- Change the initial setting of this unit (refer to the operation manual). The subwoofer output of this unit is monaural.
- When using a subwoofer of 70 W (2 Ω), be sure to connect with Violet and Violet/black leads of this unit. Do not connect anything with Green and Green/black leads.

Speaker leads

White:	Front left ⊕
White/black:	Front left ⊖
Gray:	Front right ⊕
Gray/black:	Front right ⊖
Green:	Rear left ⊕ or subwoofer ⊕
Green/black:	Rear left ⊖ or subwoofer ⊖
Violet:	Rear right ⊕ or subwoofer ⊕
Violet/black:	Rear right ⊖ or subwoofer ⊖


1.This product
2.Front output
3.AUX jack (3.5 ø)
Use a stereo mini plug cable to connect with auxiliary device.
4.USB cable
Connect to separately sold USB device.
1.5 m
5.Fuse (10 A)
6.Rear output or Subwoofer output
7.Antenna jack
8.IP-BUS input (Blue)
9.IP-BUS cable
10.Multi-CD player (sold separately)
11.Yellow/black
If you use an equipment with Mute function, wire this lead to the Audio Mute lead on that equipment. If not, keep the Audio Mute lead free of any connections.
12.Yellow
Connect to the constant 12 V supply terminal.
13.Red
Connect to terminal controlled by ignition switch (12 V DC).
14.Orange/white
Connect to lighting switch terminal.
15.Black (chassis ground)
Connect to a clean, paint-free metal location.
16.White
17.White/black
18.Gray
19.Gray/black
20.Front speaker
21.Left
22.Right
23.Green
24.Green/black
25.Violet
26.Violet/black
27.Rear speaker
28.With a 2 speaker system, do not connect anything to the speaker leads that are not connected to speakers.
29.To front output
30.To Rear output or Subwoofer output
31.Connect with RCA cables (sold separately)
32.Power amp (sold separately)
33. System remote control
34. Blue/white
Connect to system control terminal of the power amp or auto-antenna relay control terminal (max. 300 mA 12 V DC).
35.Perform these connections when using the optional amplifier.
36.Rear speaker or Subwoofer
⊕
⊖

3. BASIC ITEMS FOR SERVICE

3.1 CHECK POINTS AFTER SERVICING

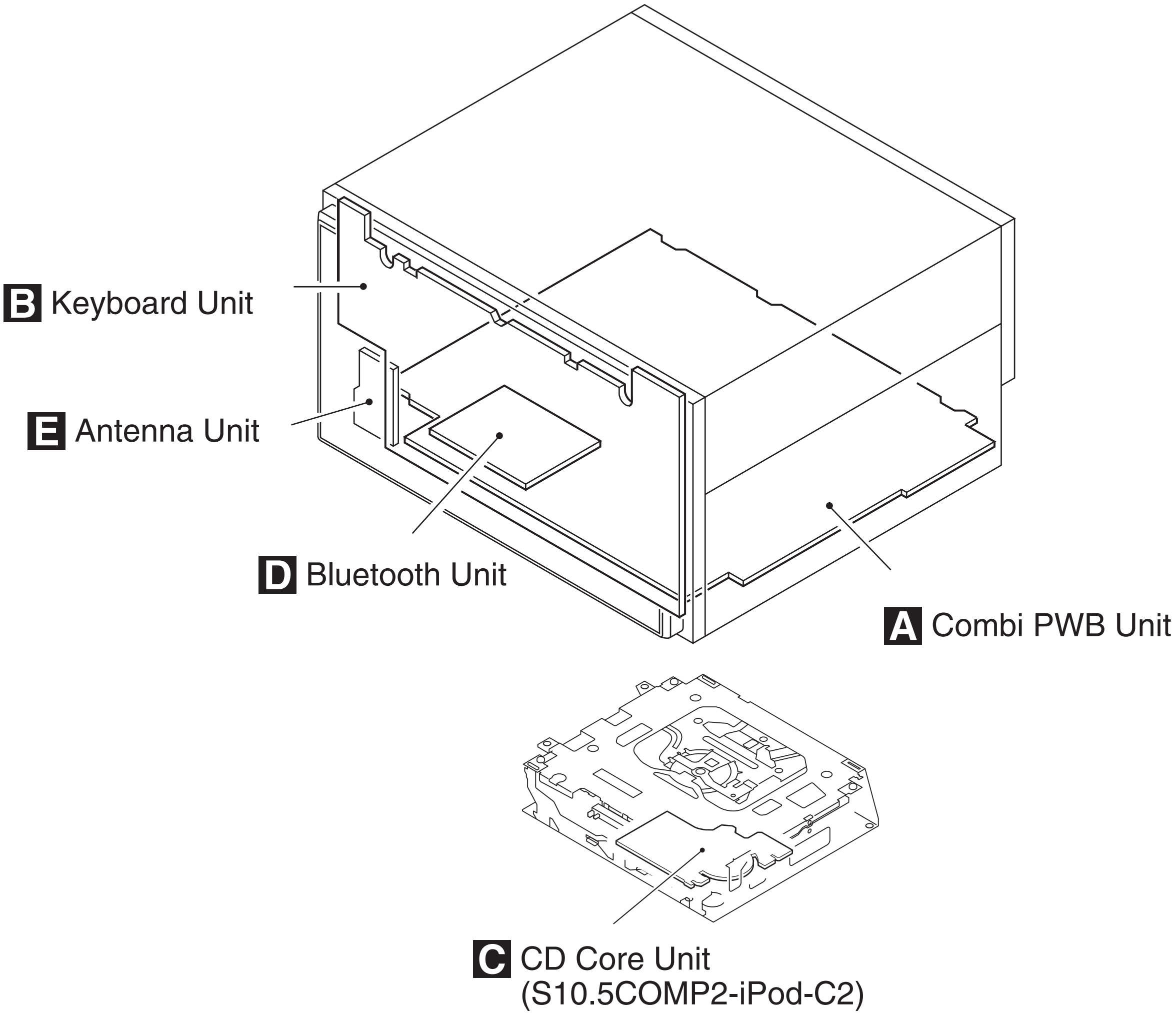
To keep the product quality after servicing, please confirm following check points.

No.		Procedures	Item to be confirmed
1		Confirm whether the customer complain has been solved. If the customer complain occurs with the specific media, use it for the operation check.	The customer complain must not be reappeared. Display, audio and operations must be normal.
2	CD	Play back a CD. (Track search)	No malfunction on display, audio and operation. Display, audio and operations must be normal.
3	FM/AM tuner	Check FM/AM tuner action. (Seek, Preset) Switch band to check both FM and AM.	Display, audio and operations must be normal.
4		Check whether no disc is inside the product.	The media used for the operating check must be ejected.
5		Appearance check	No scratches or dirt on its appearance after receiving it for service.

See the table below for the items to be checked regarding audio:

Item to be checked regarding audio
Distortion
Noise
Volume too low
Volume too high
Volume fluctuating
Sound interrupted

3.2 PCB LOCATIONS


B Keyboard Unit
E Antenna Unit
D Bluetooth Unit
A Combi PWB Unit
C CD Core Unit
(S10.5COMP2-iPod-C2)

Unit Number : CZW5569
(FH-P800BT/XJ/UC)
Unit Number : CZW5570
(FH-P8000BT/XJ/UC)
Unit Number : CZW5568
(FH-P80BT/XJ/EW5)
Unit Name : Combi PWB Unit
Unit Number : CZW5571
(FH-P6050UB/XJ/ES)
Unit Name : Comb PWB Unit
Unit Number : CZW5574(UC)
Unit Number : CZW5573(EW5)
Unit Number : CZW5575(ES)
Unit Name : Keyboard Unit
Unit Number : CWN3394(UC,EW5)
Unit Name : Bluetooth Unit
Unit Number : CWX3624
Unit Name : CD Core Unit
(S10.5COMP2-iPod-C2)

3.3 JIGS LIST

● Jigs List

	Jig No.	Remarks
Name	TCD-782	Checking the grating
Test Disc		Checking the grating (Two pieces)
L.P.F.	GGF1539	Removing the cord assy (BT antenna cable)

● Grease List

Name	Grease No.	Remarks
Grease	GEM1024	CD Mechanism Module
Grease	GEM1045	CD Mechanism Module

3.4 CLEANING

Before shipping out the product, be sure to clean the following portions by using the prescribed cleaning tools:

Portions to be cleaned	Cleaning tools
CD pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

A

B

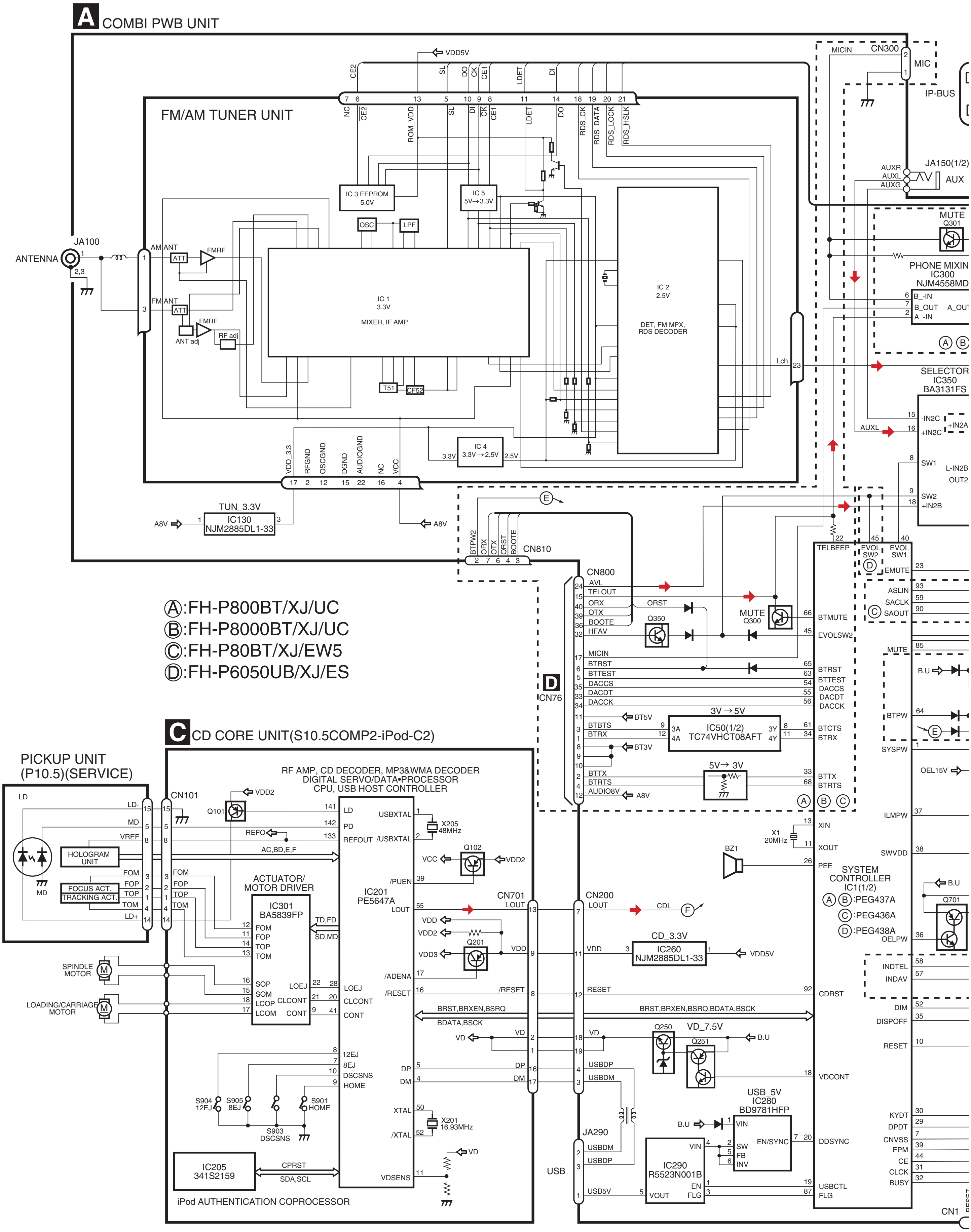
C

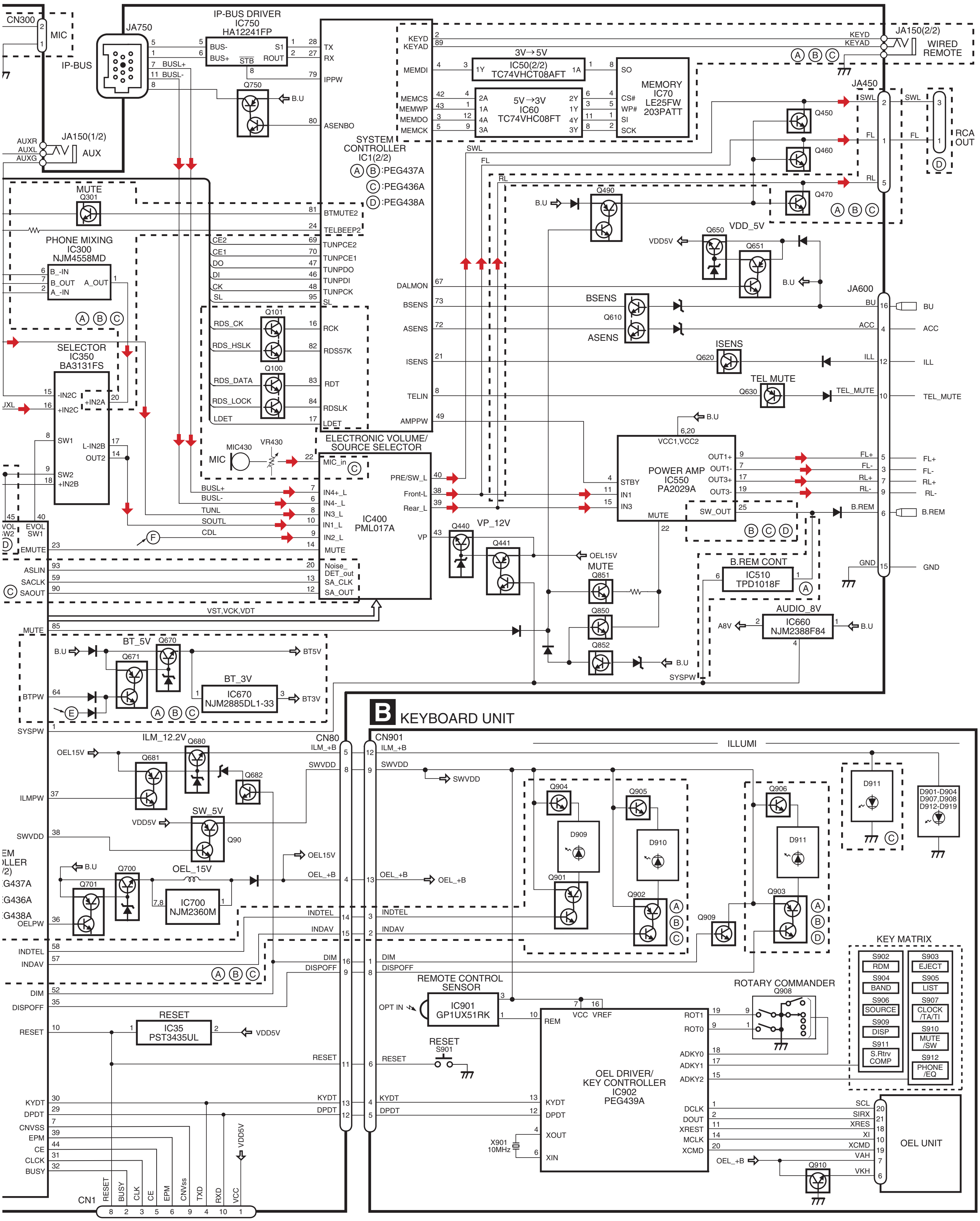
D

E

F

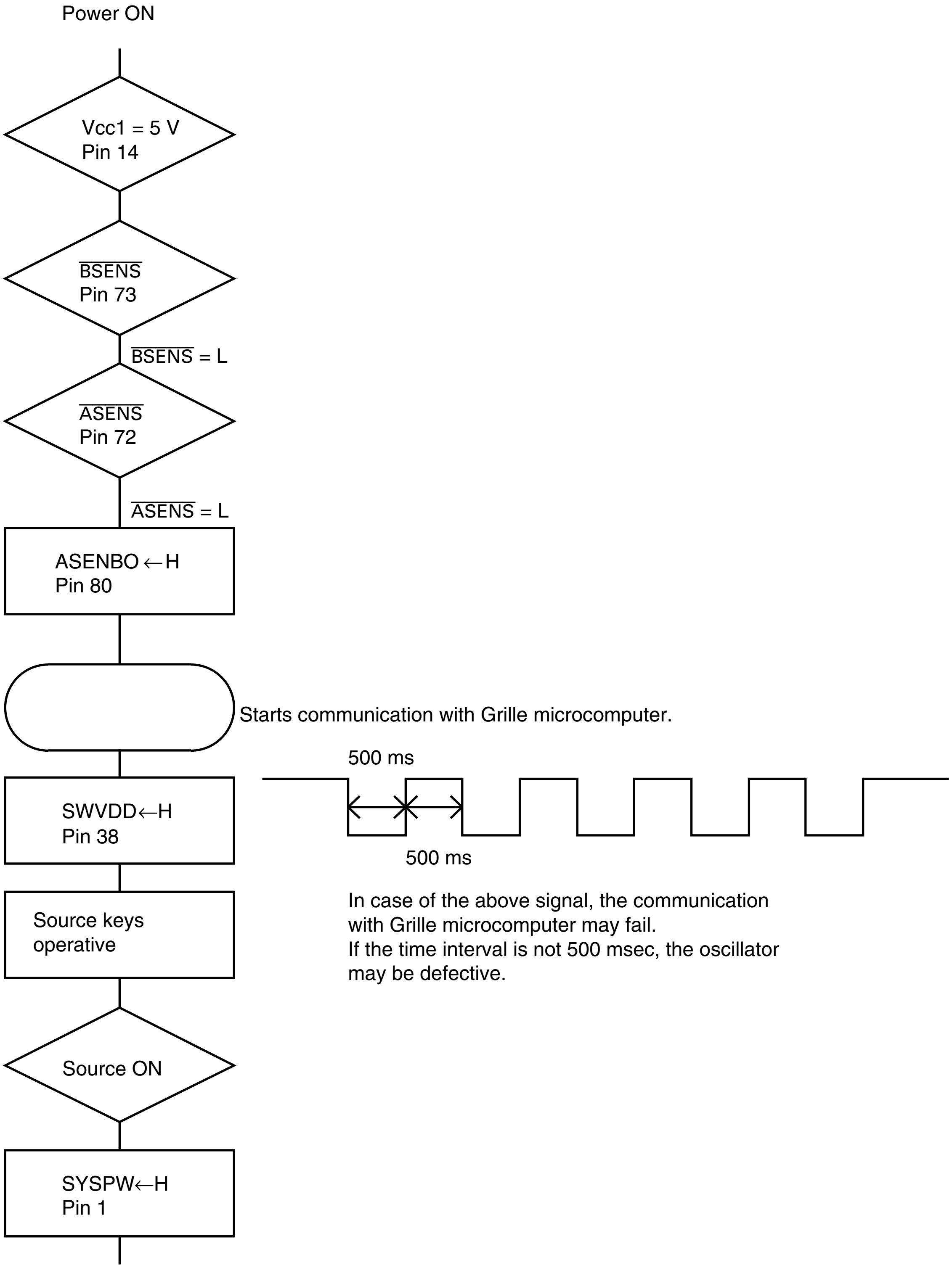
4. BLOCK DIAGRAM


A COMBI PWB UNIT
FM/AM TUNER UNIT
ANTENNA
JA100
AM ANT
FM ANT
FMRF
ATT
ANT adj
RF adj
IC 3 EEPROM 5.0V
IC 5 5V→3.3V
OSC
LPF
IC 1 3.3V MIXER, IF AMP
IC 2 2.5V DET, FM MPX, RDS DECODER
T51
CF52
IC 4 3.3V→2.5V
VDD5V
NC
CE2
ROM_VDD
SL
DI
CK
CE1
LDET
DO
RDS_CK
RDS_DATA
RDS_LOCK
RDS_HSLK
Lch
VDD_3.3
RFGND
OSCGND
DGND
AUDIOGND
VCC
TUN_3.3V
IC130 NJM2885DL1-33
A8V
CN810
BTPW2
ORX
OTX
ORST
BOOTE
CN300
MICIN
MIC
IP-BUS
JA150(1/2)
AUX
AUXR
AUXL
AUXG
MUTE Q301
PHONE MIXIN IC300 NJM4558MD
B_-IN
B_OUT
A_-IN
SELECTOR IC350 BA3131FS
-IN2C
+IN2C
SW1
SW2
+IN2B
L-IN2B
OUT2
CN800
AVL
TELOUT
ORX
OTX
BOOTE
HFAV
MICIN
BTRST
BTTEST
DACCS
DACDT
DACCK
BTBTS
BTRX
BT5V
BT3V
BTTX
BTRTS
AUDIO8V
ORST
Q350
MUTE Q300
3V→5V
IC50(1/2) TC74VHCT08AFT
5V→3V
D CN76
Ⓐ:FH-P800BT/XJ/UC
Ⓑ:FH-P8000BT/XJ/UC
Ⓒ:FH-P80BT/XJ/EW5
Ⓓ:FH-P6050UB/XJ/ES
TELBEEP
EVOL SW2
EVOL SW1
EMUTE
ASLIN
SACLK
SAOUT
BTMUTE
EVOLSW2
BTRST
BTTEST
DACCS
DACDT
DACCK
BTCTS
BTRX
BTTX
BTRTS
MUTE
B.U
BTPW
SYSPW
OEL15V
ILMPW
SWVDD
XIN
XOUT
PEE
X1 20MHz
BZ1
SYSTEM CONTROLLER IC1(1/2)
Ⓐ Ⓑ:PEG437A
Ⓒ:PEG436A
Ⓓ:PEG438A
OELPW
Q701
INDTEL
INDAV
CDRST
DIM
DISPOFF
RESET
VDCONT
DDSYNC
USBCTL
FLG
KYDT
DPDT
CNVSS
EPM
CE
CLCK
BUSY
CN1
PICKUP UNIT (P10.5)(SERVICE)
LD
MD
HOLOGRAM UNIT
FOCUS ACT.
TRACKING ACT.
LD-
VREF
FOM
FOP
TOP
TOM
LD+
C CD CORE UNIT(S10.5COMP2-iPod-C2)
CN101
Q101
VDD2
REFO
AC,BD,E,F
RF AMP, CD DECODER, MP3&WMA DECODER DIGITAL SERVO/DATA•PROCESSOR CPU, USB HOST CONTROLLER
IC201 PE5647A
USBXTAL
/USBXTAL
X205 48MHz
REFOUT
/PUEN
LOUT
VDD
VDD2
VDD3
/ADENA
/RESET
LOEJ
CLCONT
CONT
DP
DM
XTAL
/XTAL
X201 16.93MHz
VDSENS
12EJ
8EJ
DSCSNS
HOME
Q102
Q201
VCC
ACTUATOR/ MOTOR DRIVER
IC301 BA5839FP
SOP
SOM
LCOP
LCOM
TD,FD
SD,MD
SPINDLE MOTOR
LOADING/CARRIAGE MOTOR
S904 12EJ
S905 8EJ
S901 HOME
S903 DSCSNS
IC205 341S2159
CPRST
SDA,SCL
iPod AUTHENTICATION COPROCESSOR
CN701
BRST,BRXEN,BSRQ
BDATA,BSCK
VD
CN200
CDL
CD_3.3V
IC260 NJM2885DL1-33
BRST,BRXEN,BSRQ,BDATA,BSCK
Q250
VD_7.5V
Q251
USBDP
USBDM
USB_5V IC280 BD9781HFP
VIN
SW
FB
INV
EN/SYNC
JA290
USB
USB5V
IC290 R5523N001B
EN
VOUT
FLG


CN300
MIC
IP-BUS
JA750
IP-BUS DRIVER
IC750
HA12241FP
BUS-
BUS+
STB
S1
ROUT
BUSL+
BUSL-
Q750
B.U
TX
RX
IPPW
ASENBO
SYSTEM CONTROLLER
IC1(2/2)
Ⓐ Ⓑ :PEG437A
Ⓒ :PEG436A
Ⓓ :PEG438A
KEYD
KEYAD
MEMDI
MEMCS
MEMWP
MEMDO
MEMCK
3V→5V
IC50(2/2)
TC74VHCT08AFT
5V→3V
IC60
TC74VHC08FT
MEMORY
IC70
LE25FW
203PATT
SO
CS#
WP#
SI
SCK
JA150(2/2)
WIRED REMOTE
Ⓐ Ⓑ Ⓒ
JA150(1/2)
AUXR
AUXL
AUXG
AUX
MUTE
Q301
BTMUTE2
TELBEEP2
PHONE MIXING
IC300
NJM4558MD
B_-IN
B_OUT
A_OUT
A_-IN
Ⓐ Ⓑ Ⓒ
CE2
CE1
DO
DI
CK
SL
TUNPCE2
TUNPCE1
TUNPDO
TUNPDI
TUNPCK
SL
DALMON
BSENS
ASENS
ISENS
TELIN
AMPPW
RDS_CK
RDS_HSLK
RDS_DATA
RDS_LOCK
LDET
Q101
Q100
RCK
RDS57K
RDT
RDSLK
LDET
SELECTOR
IC350
BA3131FS
-IN2C
+IN2C
+IN2A
SW1
L-IN2B
OUT2
SW2
+IN2B
MIC430
VR430
MIC
ELECTRONIC VOLUME/ SOURCE SELECTOR
IC400
PML017A
MIC_in
IN4+_L
IN4-_L
IN3_L
IN1_L
IN2_L
MUTE
PRE/SW_L
Front-L
Rear_L
VP
Noise_DET_out
SA_CLK
SA_OUT
BUSL+
BUSL-
TUNL
SOUTL
CDL
EVOL SW1
EMUTE
ASLIN
SACLK
SAOUT
VST,VCK,VDT
SWL
FL
RL
Q450
Q460
Q470
JA450
RCA OUT
Ⓓ
Ⓐ Ⓑ Ⓒ
Q490
B.U
VDD_5V
VDD5V
Q650
Q651
BSENS
Q610
ASENS
ISENS
Q620
TEL MUTE
Q630
JA600
BU
ACC
ILL
TEL_MUTE
B.REM
GND
POWER AMP
IC550
PA2029A
VCC1,VCC2
STBY
IN1
IN3
MUTE
SW_OUT
OUT1+
OUT1-
OUT3+
OUT3-
FL+
FL-
RL+
RL-
Ⓑ Ⓒ Ⓓ
VP_12V
Q440
Q441
OEL15V
MUTE
Q851
Q850
Q852
B.REM CONT
IC510
TPD1018F
Ⓐ
AUDIO_8V
IC660
NJM2388F84
A8V
SYSPW
MUTE
BT_5V
Q670
Q671
BT5V
BT_3V
IC670
NJM2885DL1-33
BT3V
BTPW
Ⓔ
Ⓕ
Ⓐ Ⓑ Ⓒ
SYSPW
ILM_12.2V
Q680
Q681
Q682
OEL15V
ILMPW
SW_5V
VDD5V
Q90
SWVDD
OEL15V
OEL_15V
Q700
Q701
IC700
NJM2360M
OELPW
INDTEL
INDAV
DIM
DISPOFF
Ⓐ Ⓑ Ⓒ
RESET
IC35
PST3435UL
VDD5V
KYDT
DPDT
CNVSS
EPM
CE
CLCK
BUSY
CN1
RESET BUSY CLK CE EPM CNVss TXD RXD VCC
VDD5V
CN80
ILM_+B
SWVDD
OEL_+B
INDTEL
INDAV
DIM
DISPOFF
RESET
KYDT
DPDT
B KEYBOARD UNIT
CN901
ILLUMI
Q904
Q905
Q906
D909
D910
D911
Q901
Q902
Q903
Q909
D911
D901-D904
D907,D908
D912-D919
Ⓐ Ⓑ Ⓒ Ⓓ
REMOTE CONTROL SENSOR
IC901
GP1UX51RK
OPT IN
RESET
S901
ROTARY COMMANDER
Q908
OEL DRIVER/ KEY CONTROLLER
IC902
PEG439A
REM
VCC
VREF
ROT1
ROT0
ADKY0
ADKY1
ADKY2
KYDT
DPDT
XOUT
XIN
X901 10MHz
DCLK
DOUT
XREST
MCLK
XCMD
SCL
SIRX
XRES
XI
XCMD
VAH
VKH
OEL_+B
Q910
OEL UNIT
KEY MATRIX
S902 RDM
S903 EJECT
S904 BAND
S905 LIST
S906 SOURCE
S907 CLOCK /TA/TI
S909 DISP
S910 MUTE /SW
S911 S.Rtrv COMP
S912 PHONE /EQ

5. DIAGNOSIS

5.1 OPERATIONAL FLOWCHART


Power ON
Vcc1 = 5 V
Pin 14
$\overline{\text{BSENS}}$
Pin 73
$\overline{\text{BSENS}}$ = L
$\overline{\text{ASENS}}$
Pin 72
$\overline{\text{ASENS}}$ = L
ASENBO ← H
Pin 80
SWVDD←H
Pin 38
Source keys operative
Source ON
SYSPW←H
Pin 1
500 ms
500 ms

Starts communication with Grille microcomputer.

In case of the above signal, the communication with Grille microcomputer may fail.
If the time interval is not 500 msec, the oscillator may be defective.

Completes power-on operation.(After that, proceed to each source operation.)

5.2 ERROR CODE LIST

● Error Messages

If a CD is not operative or stopped during operation due to an error, the error mode is turned on and cause(s) of the error is indicated with a corresponding number. This arrangement is intended at reducing nonsense calls from the users and also for facilitating trouble analysis and repair work in servicing.

(1) Basic Indication Method

1) When SERRORM is selected for the CSMOD (CD mode area for the system), error codes are written to DMIN (minutes display area) and DSEC (seconds display area). The same data is written to DMIN and DSEC. DTNO remains in blank as before.

2) Head unit display examples

Depending on display capability of LCD used, display will vary as shown below. xx contains the error number.

8-digit display	6-digit display	4-digit display
ERROR-xx	ERR-xx	E-xx

(2) Error Code List

Code	Class	Displayed error code	Description of the code and potential cause(s)
10	Electricity	Carriage Home NG SERVO LSI Communication Error	CRG can't be moved to inner diameter. CRG can't be moved from inner diameter. -> Failure on home switch or CRG move mechanism. Communication error between microcomputer and SERVO LSI.
11	Electricity	Focus Servo NG	Focusing not available. -> Stains on rear side of disc or excessive vibrations on REWRITABLE.
12	Electricity	Spindle Lock NG Subcode NG	Spindle not locked. Sub-code is strange (not readable). -> Failure on spindle, stains or damages on disc, or excessive vibrations. A disc not containing CD-R data is found. Turned over disc are found, though rarely. CD signal error.
17	Electricity	Setup NG	AGC protection doesn't work. Focus can be easily lost. -> Damages or stains on disc, or excessive vibrations on REWRITABLE.
30	Electricity	Search Time Out	Failed to reach target address. -> CRG tracking error or damages on disc.
44	Electricity	ALL Skip	Skip setting for all track. (CD-R/RW)
50	Mechanism	CD On Mech Error	Mechanical error during CD ON. -> Defective loading motor, mechanical lock and mechanical sensor.
A0	System	Power Supply NG	Power (VD) is ground faulted. -> Failure on SW transistor or power supply (failure on connector).

Remarks: Mechanical errors are not displayed (because a CD is turned off in these errors).
Unreadable TOC does not constitute an error. An intended operation continues in this case.
Upper digits of an error code are subdivided as shown below:
1x: Setup relevant errors, 3x: Search relevant errors, Ax: Other errors.

Error messages

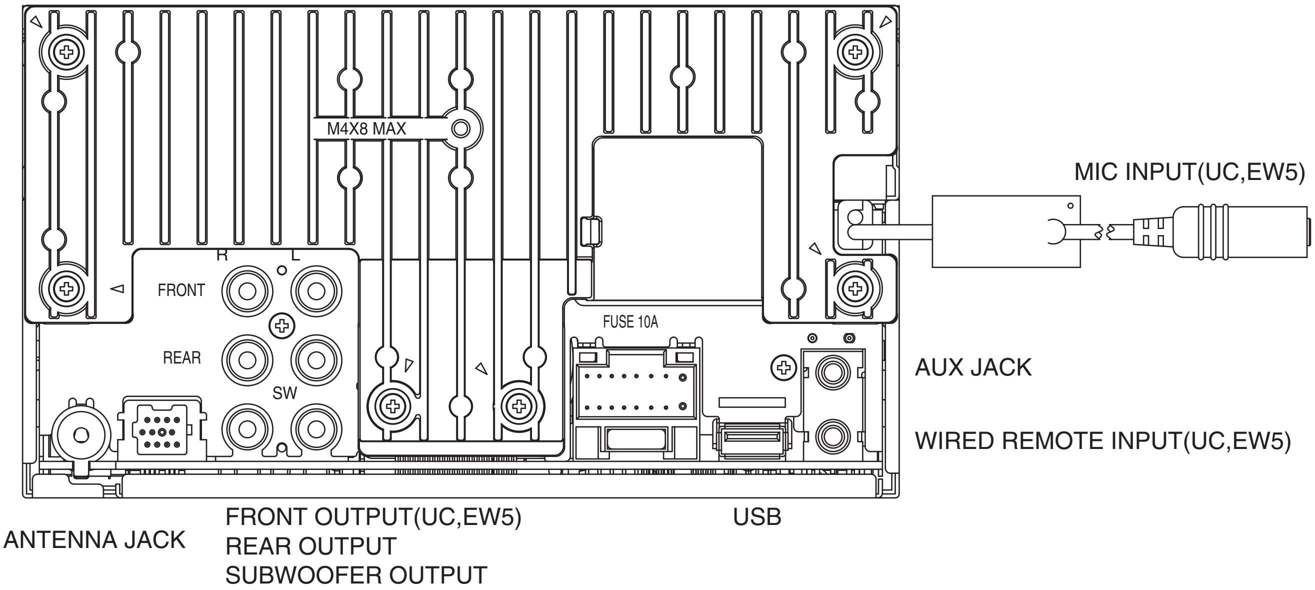
USB audio player/USB memory

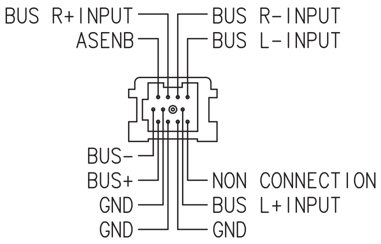
Message	Cause	Action
NO AUDIO	No songs	Transfer the audio files to the USB portable audio player/USB memory and connect.
	USB memory with security enabled is connected	Follow the USB memory instructions to disable the security.
	No songs	Transfer the songs to iPod.
TRK SKIPPED	The connected USB portable audio player/ USB memory contains WMA files that are protected by Windows Media DRM 9/10	Play an audio file not protected by Windows Media DRM 9/10.
PROTECT	All the files on the connected USB portable audio player/ USB memory are protected by Windows Media DRM 9/10	Transfer audio files not protected by Windows Media DRM 9/10 to the USB portable audio player/USB memory and connect.
N/A USB	The USB device connected to is not supported by this unit.	Connect a USB portable audio player or USB memory that is USB Mass Storage Class compliant.

iPod

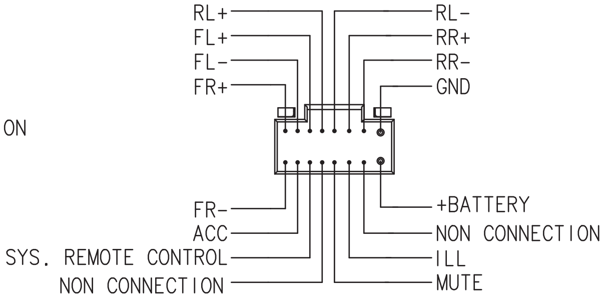
Message	Cause	Action
ERROR-19	Communication failure	Disconnect the cable from iPod. Once iPod main menu is displayed, connect the cable again. Reset the iPod.
	iPod failure	Disconnect the cable from iPod. Once iPod main menu is displayed, connect the cable again. Reset the iPod.
N/A USB	Old version of iPod	Update the iPod version.
	iPod failure	Reset the iPod.
ERROR-16	Old version of iPod	Update the iPod version.
	iPod failure	Disconnect the cable from iPod. Once iPod main menu is displayed, connect the cable again. Reset the iPod.
ERROR-A1 CHECK USB	iPod is not charged but operates correctly	Check if the connection cable for iPod shorted out (e.g., not caught in metal objects). After checking, turn the ignition switch OFF and back ON or disconnect the iPod and connect again.
NO SONGS	No songs	Transfer the songs to iPod.
STOP	No songs in the current list	Select a list that contains the songs.

5.3 CONNECTOR FUNCTION DESCRIPTION


M4X8 MAX
MIC INPUT(UC,EW5)
R
L
FRONT
REAR
SW
FUSE 10A
AUX JACK
WIRED REMOTE INPUT(UC,EW5)
ANTENNA JACK
FRONT OUTPUT(UC,EW5)
REAR OUTPUT
SUBWOOFER OUTPUT
USB


BUS R+INPUT
ASENB
BUS R-INPUT
BUS L-INPUT
BUS-
BUS+
GND
GND
NON CONNECTION
BUS L+INPUT
GND

IP BUS CONNECTOR
PIN LAYOUT


RL+
FL+
FL-
FR+
RL-
RR+
RR-
GND
FR-
ACC
SYS. REMOTE CONTROL
NON CONNECTION
+BATTERY
NON CONNECTION
ILL
MUTE

DC CONNECTOR
PIN LAYOUT

6. SERVICE MODE

6.1 CD TEST MODE

1) Cautions on adjustments

- In this product the single voltage (3.3 V) is used for the regulator. The reference voltage is the REFO1 (1.65 V) instead of the GND.

If you should mistakenly short the REFO1 with the GND during adjustment, accurate voltage will not be obtained, and the servo's misoperation will apply excessive shock to the pickup. To avoid such problems:

a. Do not mix up the REFO1 with the GND when connecting the (-) probe of measuring instruments. Especially on an oscilloscope, avoid connecting the (-) probe for CH1 to the GND.

b. In many cases, measuring instruments have the same potential as that for the (-) probe. Be sure to set the measuring instruments to the floating state.

c. If you have mistakenly connected the REFO1 to the GND, turn off the regulator or the power immediately.

- Before mounting and removing filters or leads for adjustment, be sure to turn off the regulator.

- For stable circuit operation, keep the mechanism operating for about one minute or more after the regulator is turned on.

- In the test mode, any software protections will not work. Avoid applying any mechanical or electrical shock to the mechanism during adjustment.

- The RFI and RFO signals with a wide frequency range are easy to oscillate. When observing the signals, insert a resistor of 1k ohms in series.

- The load and eject operation is not guarantied with the mechanism upside down. If the mechanism is blocked due to mistaken eject operation, reset the product or turn off and on the ACC to restore it.

2) Test mode

This mode is used to adjust the CD mechanism module.

- To enter the test mode.

While pressing the SOURCE and CLOCK(TA) keys at the same time, reset.

- To exit from the test mode.

Turn off the ACC and back up.

Notes:

a. During ejection, do not press any other keys than the EJECT key until the loaded disc is ejected.

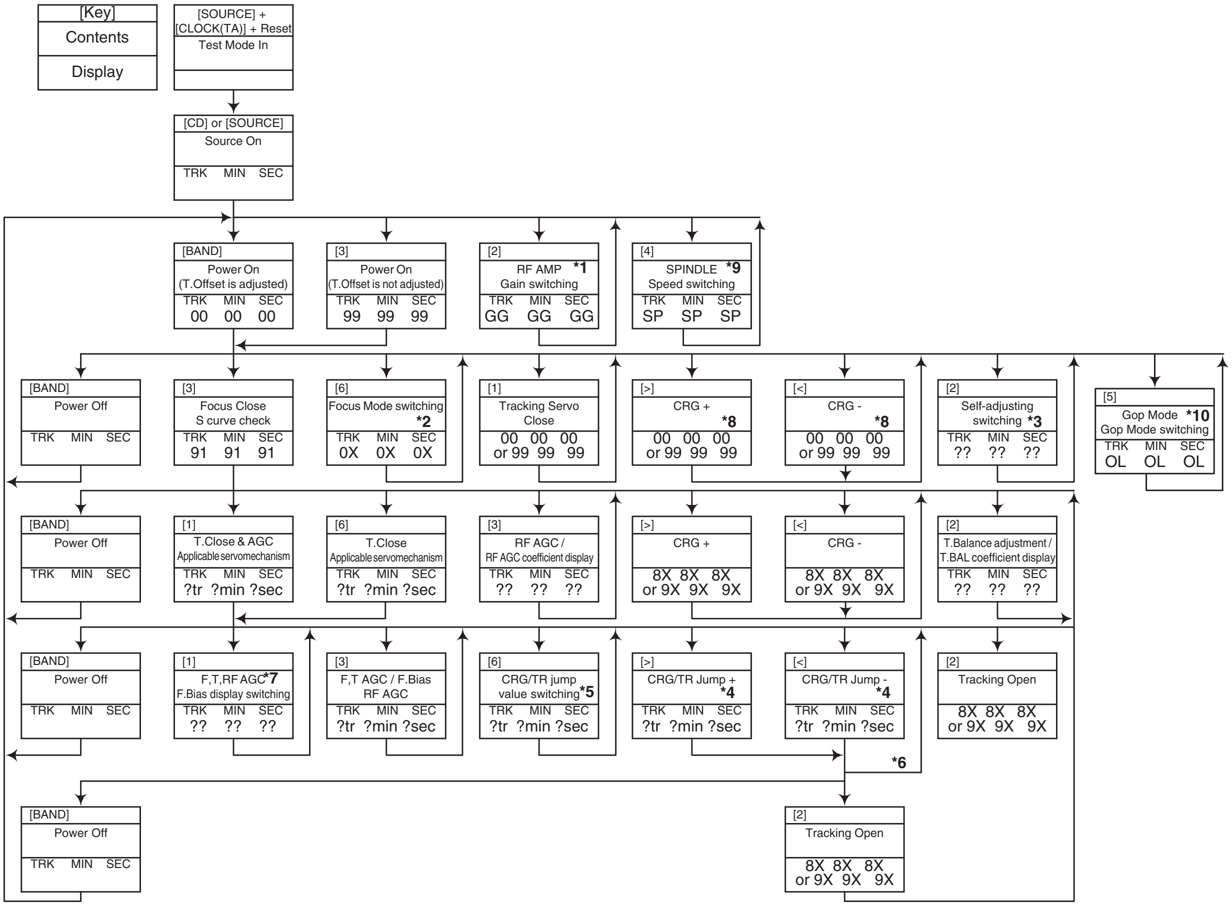
b. If you have pressed the (->) key or (<-) key during focus search, turn off the power immediately to protect the actuator from damage caused by the lens stuck.

c. For the TR jump modes except 100TR, the track jump operation will continue even if the key is released.

d. For the CRG move and 100TR jump modes, the tracking loop will be closed at the same time when the key is released.

e. When the power is turned off and on, the jump mode is reset to the single TR (91), the RF amp gain is set to 0 dB, and the auto-adjustment values are reset to the default settings.

Flow Chart


[Key]
Contents
Display
[SOURCE] + [CLOCK(TA)] + Reset
Test Mode In
[CD] or [SOURCE]
Source On
TRK MIN SEC
[BAND]
Power On (T.Offset is adjusted)
TRK MIN SEC 00 00 00
[3]
Power On (T.Offset is not adjusted)
TRK MIN SEC 99 99 99
[2]
RF AMP *1 Gain switching
TRK MIN SEC GG GG GG
[4]
SPINDLE *9 Speed switching
TRK MIN SEC SP SP SP
[BAND]
Power Off
TRK MIN SEC
[3]
Focus Close S curve check
TRK MIN SEC 91 91 91
[6]
Focus Mode switching *2
TRK MIN SEC 0X 0X 0X
[1]
Tracking Servo Close
00 00 00 or 99 99 99
[>]
CRG + *8
00 00 00 or 99 99 99
[<]
CRG - *8
00 00 00 or 99 99 99
[2]
Self-adjusting switching *3
TRK MIN SEC ?? ?? ??
[5]
Gop Mode *10 Gop Mode switching
TRK MIN SEC OL OL OL
[BAND]
Power Off
TRK MIN SEC
[1]
T.Close & AGC Applicable servomechanism
TRK MIN SEC ?tr ?min ?sec
[6]
T.Close Applicable servomechanism
TRK MIN SEC ?tr ?min ?sec
[3]
RF AGC / RF AGC coefficient display
TRK MIN SEC ?? ?? ??
[>]
CRG +
8X 8X 8X or 9X 9X 9X
[<]
CRG -
8X 8X 8X or 9X 9X 9X
[2]
T.Balance adjustment / T.BAL coefficient display
TRK MIN SEC ?? ?? ??
[BAND]
Power Off
TRK MIN SEC
[1]
F,T,RF AGC *7 F.Bias display switching
TRK MIN SEC ?? ?? ??
[3]
F,T AGC / F.Bias RF AGC
TRK MIN SEC ?tr ?min ?sec
[6]
CRG/TR jump value switching *5
TRK MIN SEC ?tr ?min ?sec
[>]
CRG/TR Jump + *4
TRK MIN SEC ?tr ?min ?sec
[<]
CRG/TR Jump - *4
TRK MIN SEC ?tr ?min ?sec
[2]
Tracking Open
8X 8X 8X or 9X 9X 9X
*6
[BAND]
Power Off
TRK MIN SEC
[2]
Tracking Open
8X 8X 8X or 9X 9X 9X

*1) TYP -> + 6 dB -> + 12 dB
TRK MIN SEC   TRK06 MIN06 SEC06   TRK12 MIN12 SEC12

*2) Focus Close -> S.Curve -> F EQ measurement setting
TRK00 MIN00 SEC00   TRK01 MIN01 SEC01   TRK02 MIN02 SEC02
(TRK99 MIN99 SEC99)

*3) F.Offset Display -> RF.Offset -> T.Offset Display -> Switch to the order of the original display

*4) 1TR/4TR/10TR/32TR/100TR

*5) Single -> 4TR -> 10TR -> 32TR -> 100TR -> CRG Move
9x(8x):91(81) 92(82) 93(83) 94(84) 95(85) 96(86)

*6) Only at the time of CRG move, 100TR jump

*7) TRK/MIN/SEC -> F.AGC -> T.AGC Gain -> F Bias -> RF AGC

*8) CRG motor voltage = 2 [V]

*9) TYP (1X) -> 2X -> 1X
TRK MIN SEC   TRK22 MIN22 SEC22   TRK11 MIN11 SEC11

*10) OFF(TYP) -> FORCUS -> TRACKING
TRK MIN SEC   TRK70 MIN70 SEC70   TRK71 MIN71 SEC71

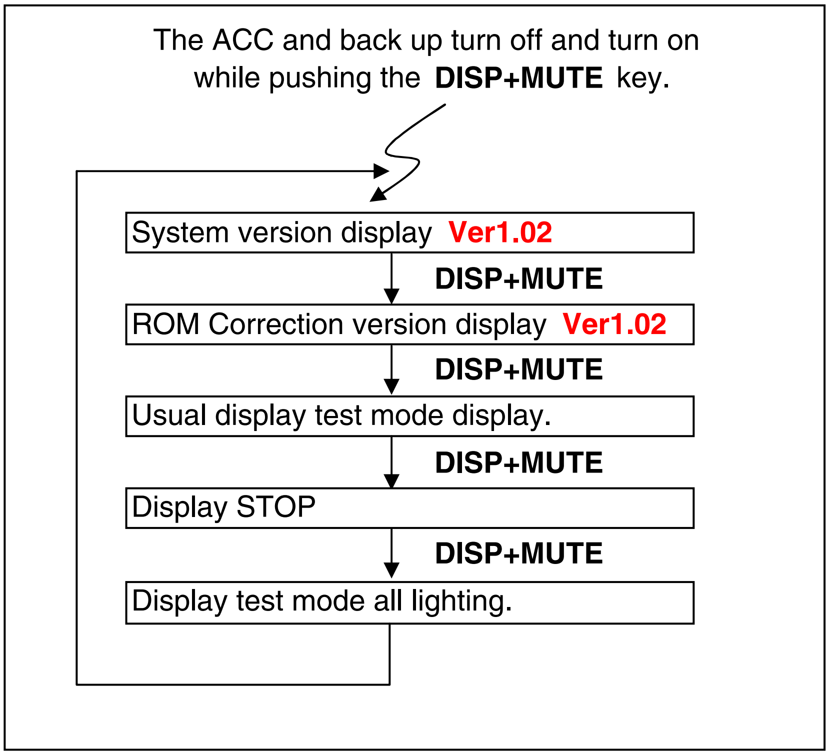
[Key]	Operation Test Mode
[BAND]	Power On/Off
[>]	CRG + / TR Jump + (Direction of the external surface)
[<]	CRG - / TR Jump - (Direction of the internal surface)
[1] Remote control Unit	T. CLS & AGC & Applicable servomechanism / AGC,AGC display setting
[2] Remote control Unit	RF Gain switching / Offset adjustment display / T.Balance adjustment / T. Open
[3] Remote control Unit	F. Close,S Curve / Rough Servo and RF AGC / F,T,RF AGC
[4] Remote control Unit	SPDL 1X/2X switching As for the double speed(2x), audio output cannot be supported.
[5] Remote control Unit	Error Rate measurement ON : ERR 30 Counts Start BER display data[%]
[6] Remote control Unit	F. Mode switching / Tracking Close / CRG•TR Jump Switching

- As for the double speed (2x), audio output cannot be supported
- After the [Eject] key is pressed keys other than the [Eject] key should not be pressed, until disc ejection is complete.
- When the key [2] or [3] is pressed during the Focus Search, the power supply should be immediately turned off (otherwise the lens sticks to Wall, causing the actuator to be damaged).
- In the case of TR jump other than to 100TR, the function shall continue to be processed even if the TR jump key is released. As for the CRG Move and 100TR Jump, the mechanism shall be set to the Tracking Close mode when the key is released.
- When the power is turned on/off the jump mode is reset to the Single TR (91) while the gain of the RFAMP is reset to 0 dB. At the same time all the self-adjusting values shall return to the default setting.

6.2 DISPLAY TEST MODE

Display test mode

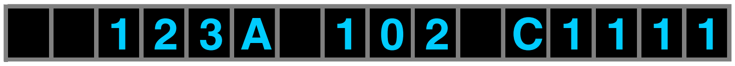
The ACC and back up turn off and turn on while pushing the **DISP+MUTE** key.
To the display test mode.


The ACC and back up turn off and turn on while pushing the DISP+MUTE key.
System version display Ver1.02
DISP+MUTE
ROM Correction version display Ver1.02
DISP+MUTE
Usual display test mode display.
DISP+MUTE
Display STOP
DISP+MUTE
Display test mode all lighting.

System version display

When System version is displayed,
the PD number, the system microcomputer version, and the CWW number is displayed.

Example) For PEG123A VER1.02 CWW1111


123A 102 C1111

6.3 BLUETOOTH TEST MODE

● About Memory Clear

When resetting the microprocessor, the memory is initialized except for the following five items.
This enables user to avoid the task of registering phones and transfering phone directory again even after resetting system at the time of battery exchange, etc.

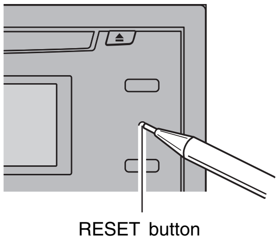
- phone book entries on the Bluetooth telephone
- preset numbers on the Bluetooth telephone
- registration assignment of Bluetooth telephone
- call history of Bluetooth telephone
- history of the most recently connected Bluetooth audio

Resetting the microprocessor

The microprocessor must be reset under the following conditions:

- Prior to using this unit for the first time after installation
- If the unit fails to operate properly
- When strange or incorrect messages appear on the display

● Press RESET with a pen tip or other pointed instrument.



Resetting the Bluetooth wireless technology module

Bluetooth telephone and Bluetooth Audio data can be deleted. To protect personal information, we recommend deleting this data before transferring the unit to other persons. The following settings will be deleted.

— phone book entries on the Bluetooth telephone
— preset numbers on the Bluetooth telephone
— registration assignment of Bluetooth telephone
— call history of Bluetooth telephone
— history of the most recently connected Bluetooth audio

1 Press SOURCE and hold until the unit turns off.

2 Press MULTI-CONTROL and hold until the initial setting menu appears in the display.

3 Turn MULTI-CONTROL to select of BT RESET:MEMORY .

4 Push MULTI-CONTROL right to show a confirmation display.
BT RESET:YES is displayed. Clearing memory is now on standby.
# If you do not want to reset phone memory, press BAND/ESC.

5 Press MULTI-CONTROL to clear the memory.

● Bluetooth Test Mode (when using BT-compliant mobile phone)

Specifications for BT Built-in mobile phone

The mobile phone compliant to Bluetooth Ver 1.1 requires at least *HFP and *OPP to be mounted.
The model having validly accomplished connecting verification is desirable. [CDMA A5504T(TOSHIBA), 6230(Nokia)etc.)]
The model capable of being in standby state is desirable.

1. Cautions

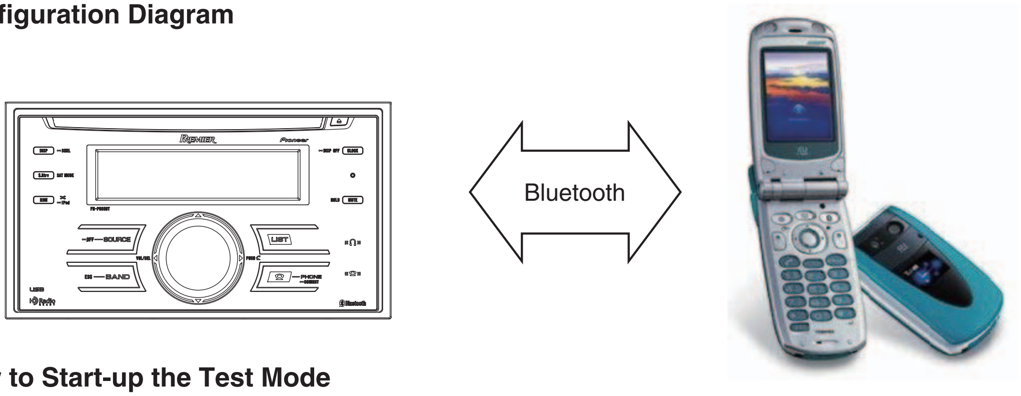
*These cautions are for the case where mobile phone is actually connected at the service site.
When the mobile phone is actually connected for checking action or the like and the model is registered at the service site, returning the unit directly to user will leave the telephone information on it which had been registered at the service site. Thus, in such case, the task to clear only the telephone information used at the service will be required from the FUNCTION menu.
[Important]
When the mobile phone is actually connected to the registration number of which a user has already registered among available No.1 through 3 for registration, take note that the telephone information having registered by user will be overwritten.

2. Outline of Functions

The following 2 items are to be confirmed for the simple BT action check by using BT-compliant mobile phone:

- Confirmation of Bluetooth connection (certification connection and voice connection)
- Confirmation of BT antenna sensitivity (connection)

3. Configuration Diagram

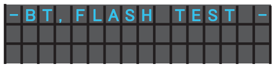


4. How to Start-up the Test Mode

Specifications for Operation

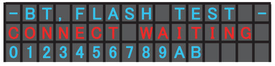
Operation method

Test mode starts by the ACC and back up turn off and turn on while pressing ASR+PHONE keys simultaneously.



```
-BT. FLASH TEST -
```

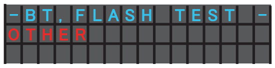
↓ Echo cancellation OFF(automatic operation)



```
-BT. FLASH TEST -
CONNECT WAITING
0123456789AB
```

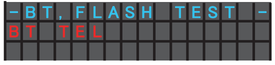
The BD address of the machine is displayed.
(Local address)

↓ BT equipment call connected



```
-BT. FLASH TEST -
OTHER
```

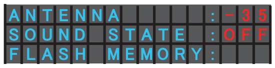
↓ Source change completion(automatic operation)



```
-BT. FLASH TEST -
BT TEL
```

Source name display

↓ Antenna check end(automatic operation)



```
ANTENNA     :-35
SOUND STATE :OFF
FLASH MEMORY:
```

Result of Antenna check display

The value is only a criterion. When the mobile phone is placed nearest in the front of the product, the value indicates somewhere between -80 and -18. Other than this value or the absence of indication refers to the defective BT antenna connection.

● Bluetooth Test Mode (when using 2.4 GHz-compliant spectrum analyzer)

1. Cautions

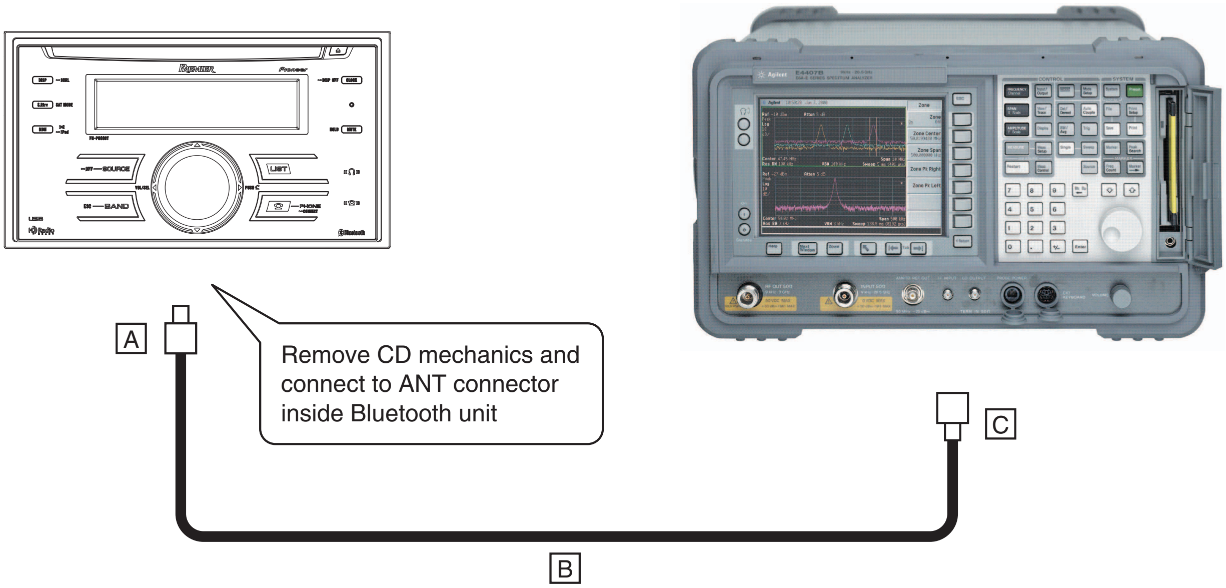
* When the service site has a 2.4 GHz-compliant spectrum analyzer, the peripheral facilities shown below are also required.
Also, the antenna terminal on BT unit must be directly connected to the cable.
A gray coaxial cable connected to the antenna connector on BT unit is removed by taking out the upper case and CD mechanics of the product.
This task would be safer if a special connector-drawing jig is available.
Next, the U.FL connector from spectrum analyzer is connected. The styling of cable must be taken good care so as not to add further burden on BT antenna connector and to break it.

2. Outline of Functions

The following confirmation is to be conducted by test mode in order to simply check BT actions using 2.4 GHz-compliant spectrum analyzer.
* Confirmation of output level of Bluetooth unit

3. Configuration Diagram

2.4 GHz-compliant spectrum analyzer



Remove CD mechanics and connect to ANT connector inside Bluetooth unit

A: U.FL-SMA conversion adapter
(Hirose Electric Co., Ltd CL311-0301-5)
B: Coaxial cable for SMA microwave
(Stack Electronics Co., Ltd. SMA • P-100-STF358)
C: SMA conversion connector
(Stack Electronics Co., Ltd. BA057)

4. How to Start-up the Test Mode

Specifications for Operation

Operation method

SOURCE + CLOCK/TA + RESET

PIONEER

<Demonstration screen>

↓ PHONE

LOOP BACK

Select Mode by right & left keys. Select LOCAL TX NM (data non-modulation).

↓

LOCAL TX NM

Determine by Center key and select frequency. Initial value is 2 402 MHz.
Select frequency by Up & Down keys. Initial value is 2 402 MHz.
02:2402<->41:2441<->80:2480

↓

TX FLEQ 02-2402

Determine by Center key.
Screen displaying LOCAL TX NM Setup Defined. This is the end of product setup.

↓ Center key

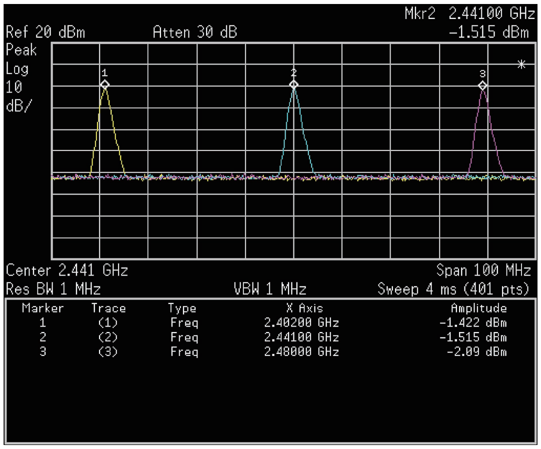
LOCAL TX NM EXE

↓ DISP key ↑

T02 R-- G-- EXE

Measure each of 02, 41 and 80.
Return to SEL screen by BAND key.

Determine the output level of each frequency
by spectrum analyzer upon the above connection.
The output level V must be within the range
of the following as a determination standard:
"-6 dBm<V<4 dBm"


Mkr2 2.44100 GHz
-1.515 dBm
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
1
2
3
*
Center 2.441 GHz
Span 100 MHz
Res BW 1 MHz
VBW 1 MHz
Sweep 4 ms (401 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.40200 GHz	-1.422 dBm
2	(2)	Freq	2.44100 GHz	-1.515 dBm
3	(3)	Freq	2.48000 GHz	-2.09 dBm

7. DISASSEMBLY

● Removing the Cace and Grille Assy(Fig.1)

1 Remove the screw
and then remove the Case.

2 Remove the two screw.

Detach the four hooks on tip of white arrows
and then remove the Grille Assy.

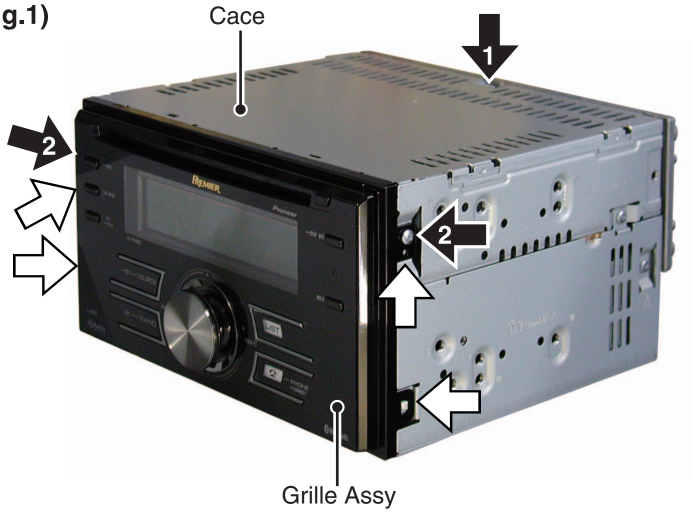

Cace
1
2
2
Grille Assy

Fig.1

● Removing the Keyboard Unit (Fig.2,3)

Remove the Knob Unit.(Fig.2)

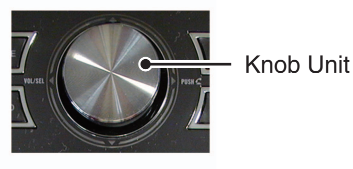


Fig.2

1 Remove the ten screws
and then remove the Keyboard Unit.(Fig.3)

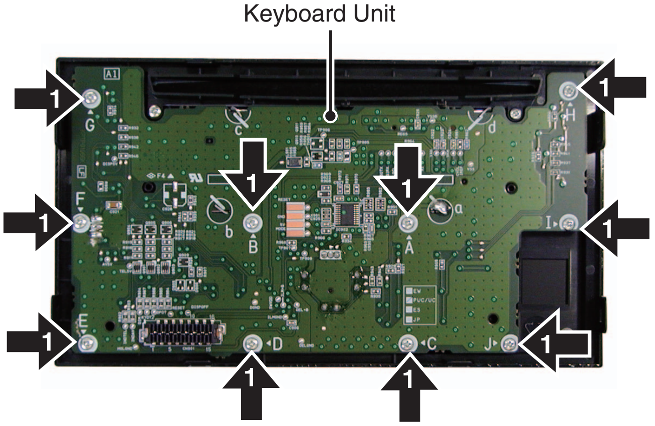

Keyboard Unit
1
1
1
1
1
1
1
1
1
1

Fig.3

● Removing the CD Mechanism Module (Fig.4)

1 Remove the four screws.

Disconnect the cable
and then remove the CD Mechanism Module.

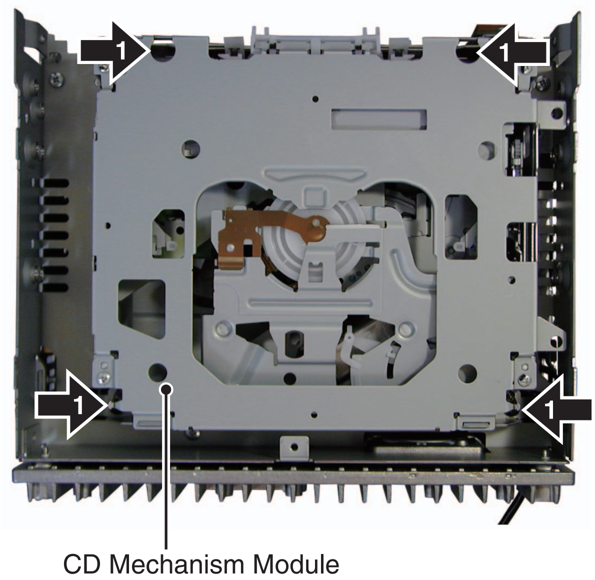

1
1
1
1
CD Mechanism Module

Fig.4

Removing the Cace Unit(Fig.5,6)

1 Remove the two screws.(Fig.5)

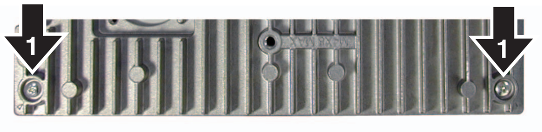


Fig.5

2 Remove the five screws
and then remove the Cace Unit.(Fig.6)

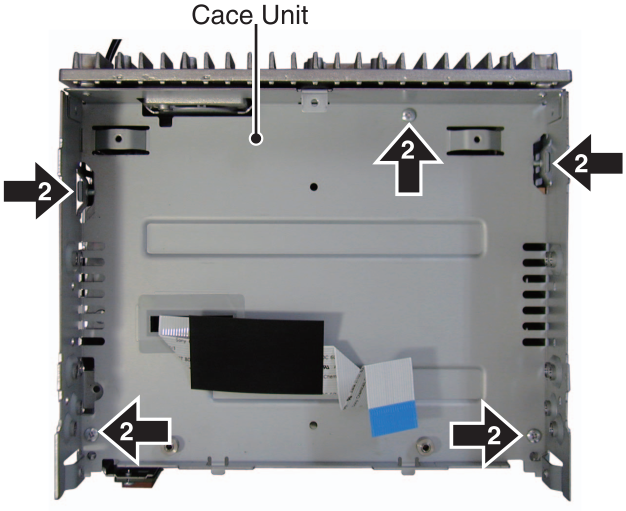
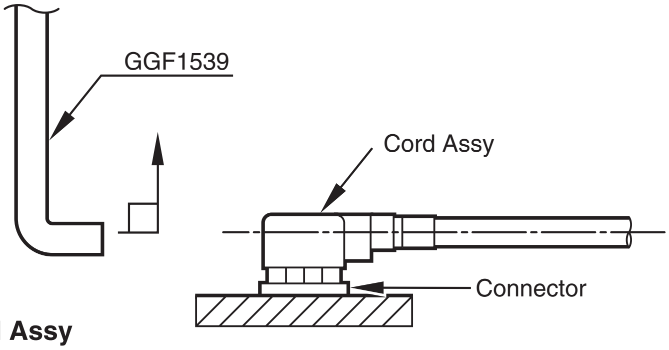


Fig.6

When unplugging the cord assy, make sure to use jig GGF1539.
If the antenna cable is directly unplugged without using jig GGF1539, you might damage your fingertip or fingernail.

How to Remove the Cord Assy

When unplugging cord assy, hook the point of jig GGF1539 on the lid of cord assy and vertically draw out along with the engagement axis of connector.



How to Attach the Cord Assy

For inserting cord assy, adjust cord assy with the engagement axis of connector and insert it as vertically as possible.
Do not insert the cord assy in extreme slant, as the connector might suffer damage.

Removing the Antenna Unit(Fig.7)

Disconnect the Cord Assy using GGF1539.

1 Remove the two screws
ant then remove the Antenna Unit.

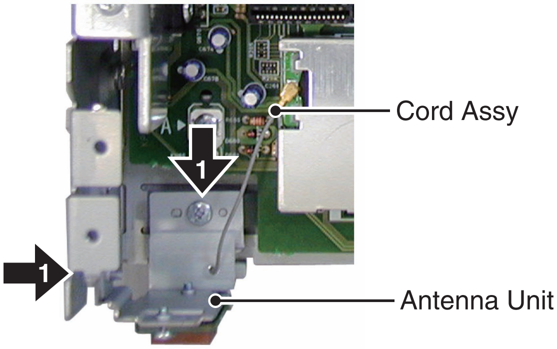


Fig.7

● Removing the Combi PWB Unit (Fig.8,9)

1 Remove the two screw.(Fig.8)

2 Remove the two screws
and the remove Heatsink.(Fig.8)

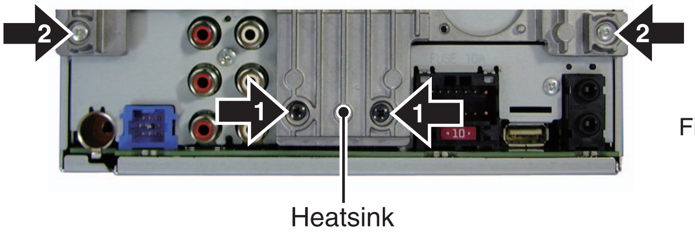
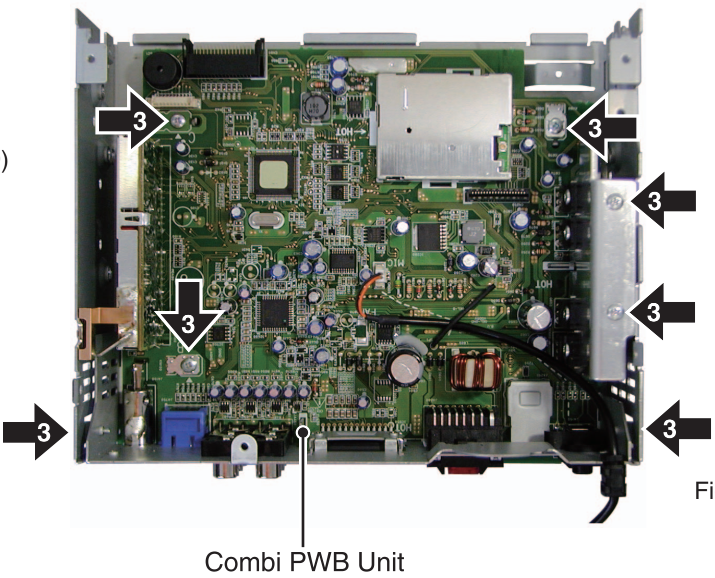

2
2
1
1
Heatsink

Fig.8

3 Remove the seven screws
and then remove Combi PWB Unit.(Fig.9)


3
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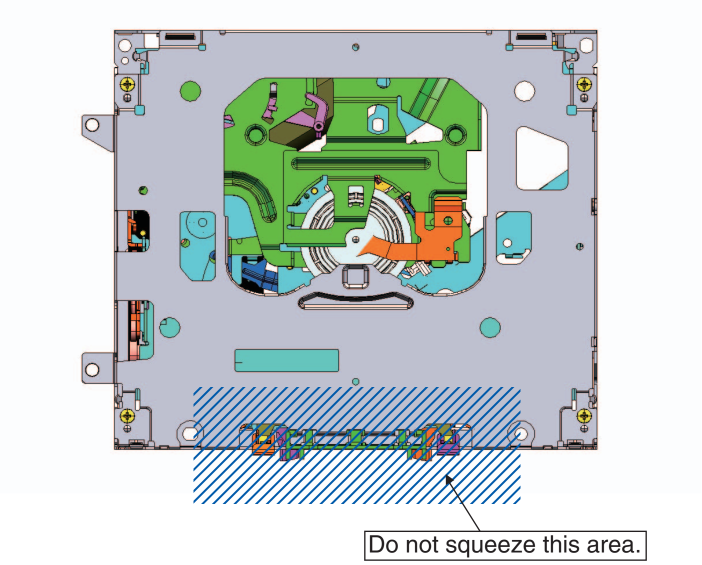
3
3
Combi PWB Unit

Fig.9

● How to hold the Mechanism Unit

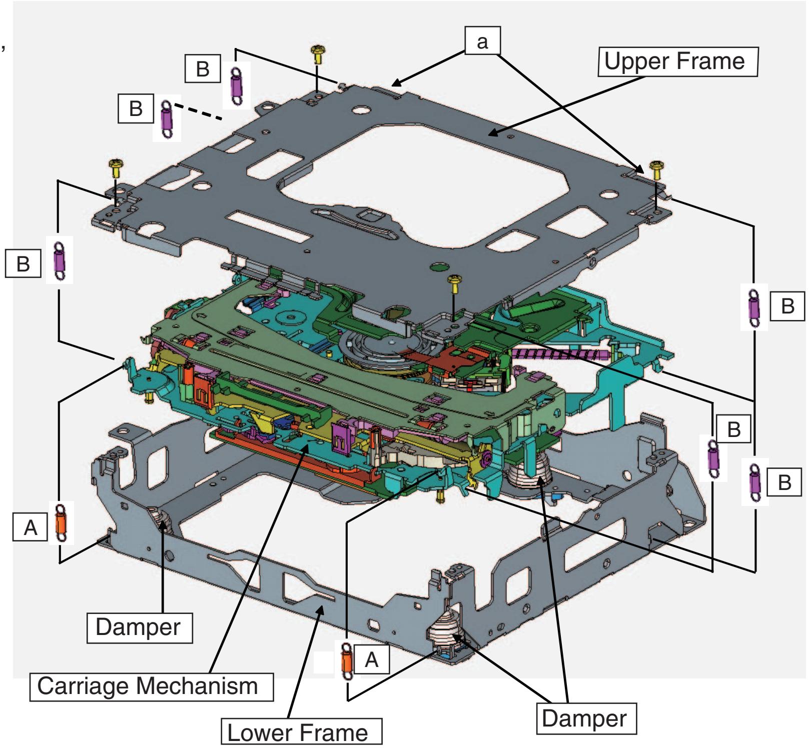
1. Hold the Upper and Lower Frames.
2. Do not hold the front portion of the Upper Frame, because it is not very solid.


Do not squeeze this area.

● Removing the Upper and Lower Frames

1. With a disc inserted and clamped in the mechanism, remove the two Springs (A), the six Springs (B), and the four Screws.
2. Turn the Upper Frame using the part "a" as a pivot, and remove the Upper Frame.
3. While lifting the Carriage Mechanism, remove it from the three Dampers.

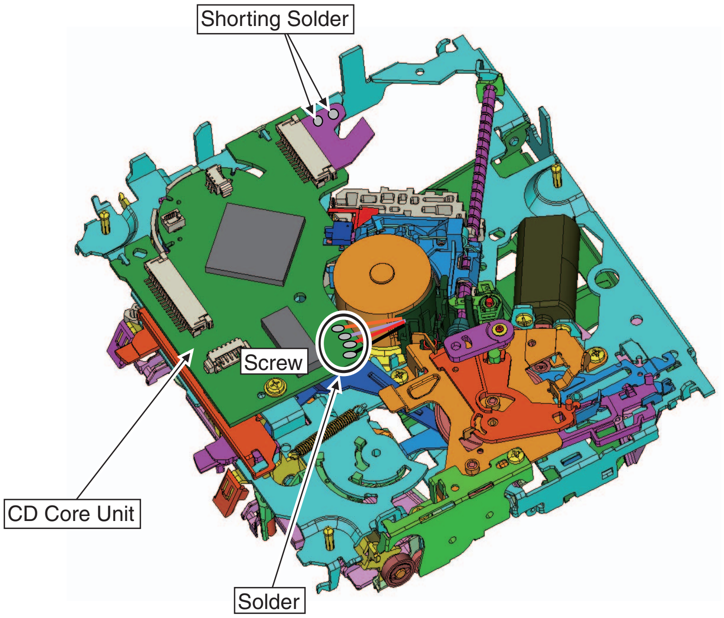
Caution: When assembling, be sure to apply some alcohol to the Dampers and assemble the mechanism in a clamped state.


a
Upper Frame
B
B
B
B
B
B
A
A
Damper
Carriage Mechanism
Lower Frame
Damper

● How to remove the CD Core Unit

1. Apply Shorting Solder to the flexible cable of the Pickup, and disconnect it from the connector.
2. Unsolder the four leads, and loosen the Screw.
3. Remove the CD Core Unit.

Caution: When assembling the CD Core Unit, assemble it with the SW in a clamped state so as not to damage it.

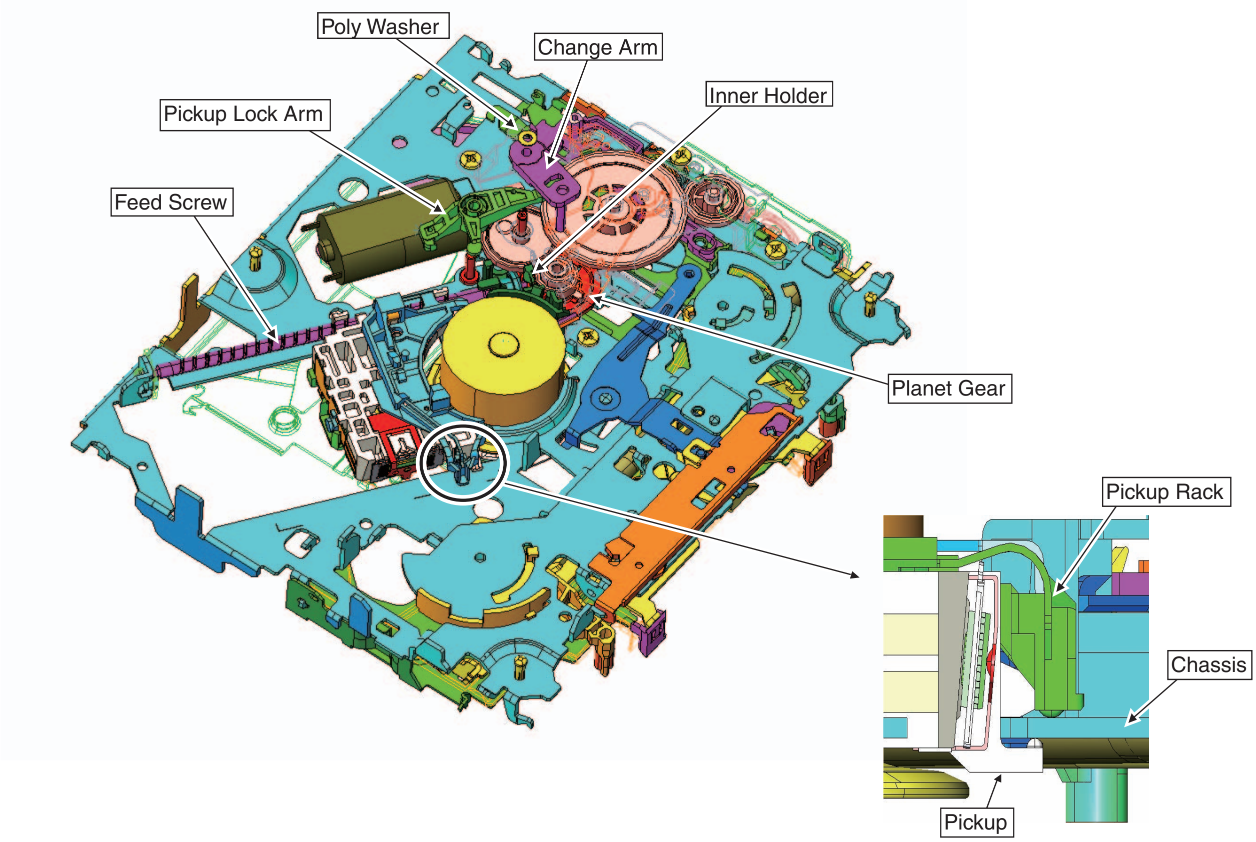

Shorting Solder
Screw
CD Core Unit
Solder

● How to remove the Pickup Unit

1. Make the system in the carriage mechanism mode, and have it clamped.
2. Remove the CD Core Unit and remove the leads from the Inner Holder.
3. Remove the Poly Washer, Change Arm, and Pickup Lock Arm.
4. While releasing from the hook of the Inner Holder, lift the end of the Feed Screw.

Caution: When assembling, move the Planet Gear to the load/eject position before setting the Feed Screw in the Inner Holder.

Assemble the sub unit side of the Pickup, taking the plate (Chassis) in-between. When treating the leads of the Load Carriage Motor Assy, do not make them loose over the Feed Screw.


Poly Washer
Change Arm
Inner Holder
Pickup Lock Arm
Feed Screw
Planet Gear
Pickup Rack
Chassis
Pickup

8. EACH SETTING AND ADJUSTMENT

8.1 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT

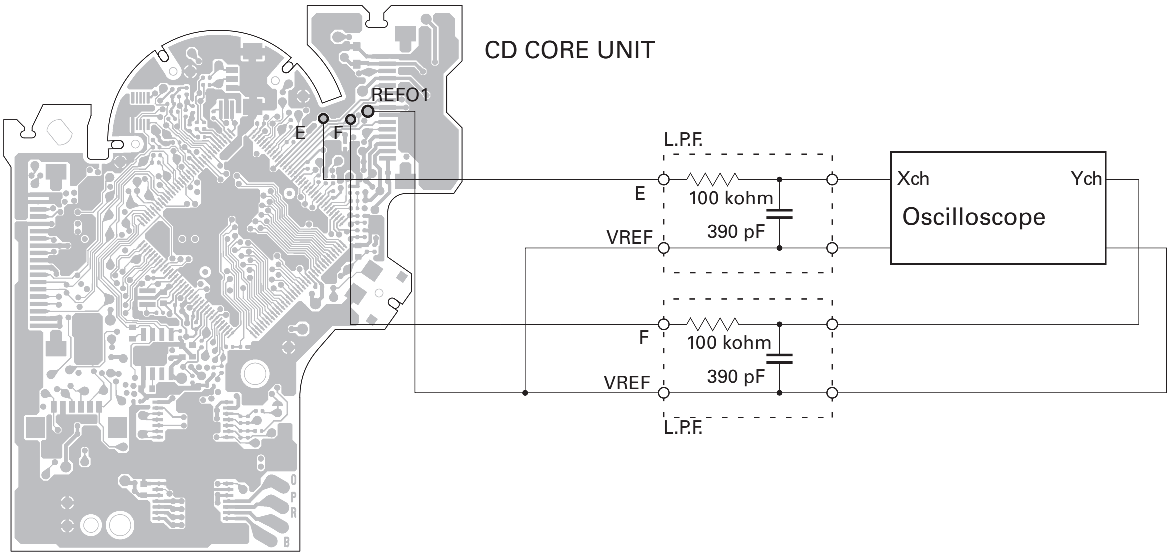
- **Note :**
  The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

- **Purpose :**
  To check that the grating is within an acceptable range when the PU unit is changed.

- **Symptoms of Mal-adjustment :**
  If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or taking a long time for track searching.

- **Method :**

• Measuring Equipment	• Oscilloscope, Two L.P.F.
• Measuring Points	• E, F, REFO1
• Disc	• TCD-782
• Mode	• TEST MODE



- **Checking Procedure**

1. In test mode, load the disc and switch the 3 V regulator on.
2. Using the -> and <- buttons, move the PU unit to the innermost track.
3. Press key 3 to close focus, the display should read "91". Press key 2 to implement the tracking balance adjustment the display should now read "81". Press key 3. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75 degrees. Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75 degrees try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75 degrees then the mechanism should be judged to be at fault.

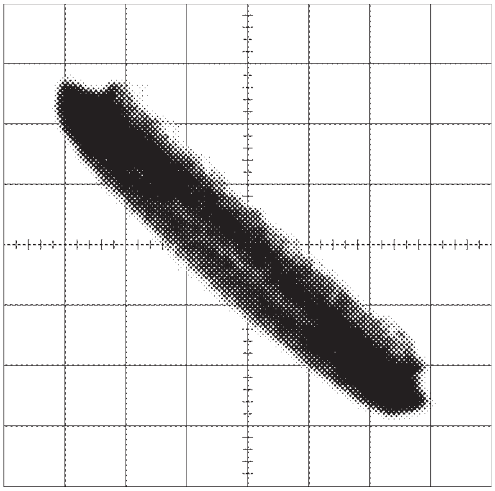
- **Note**
  Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

- **Hint**
  Reloading the disc changes the clamp position and may decrease the "wobble".

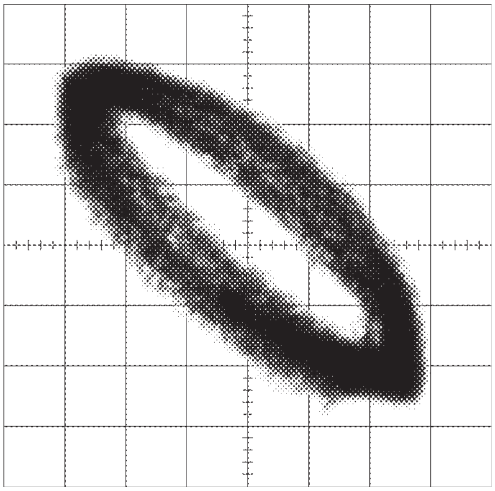
Grating waveform

Ech -> Xch 20 mV/div, AC
Fch -> Ych 20 mV/div, AC

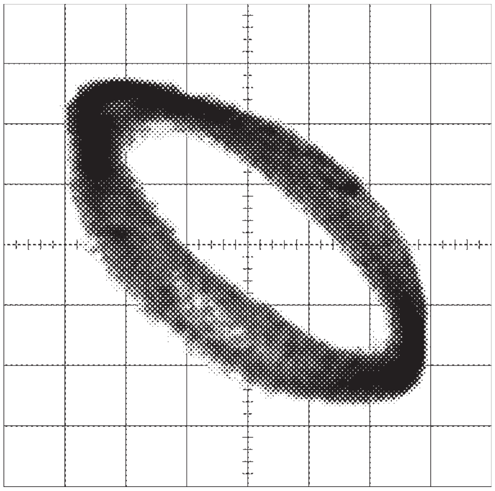
0 degrees



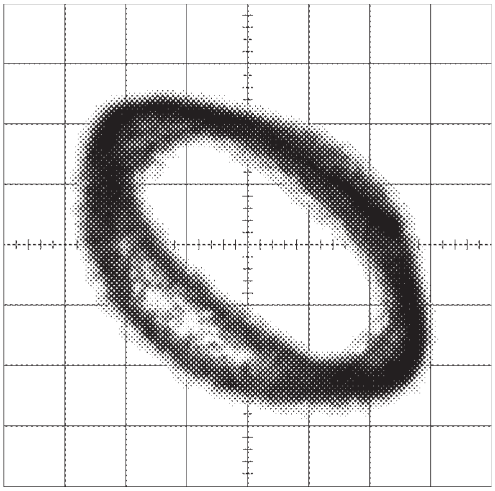
30 degrees



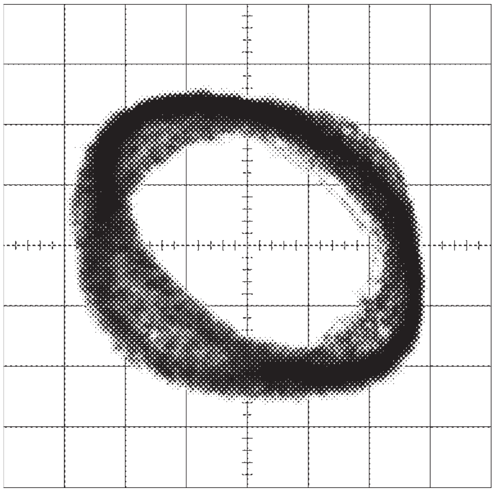
45 degrees



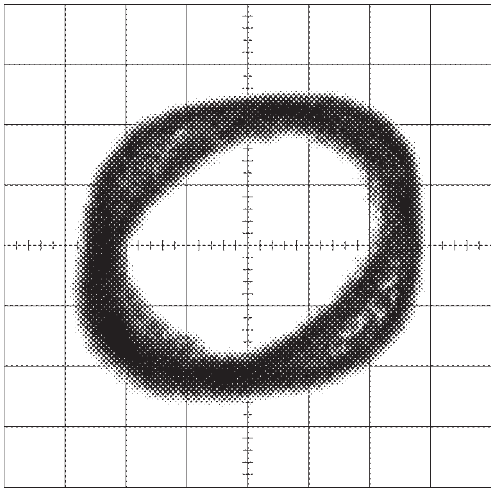
60 degrees



75 degrees



90 degrees



8.2 PCL OUTPUT CONFIRMATION

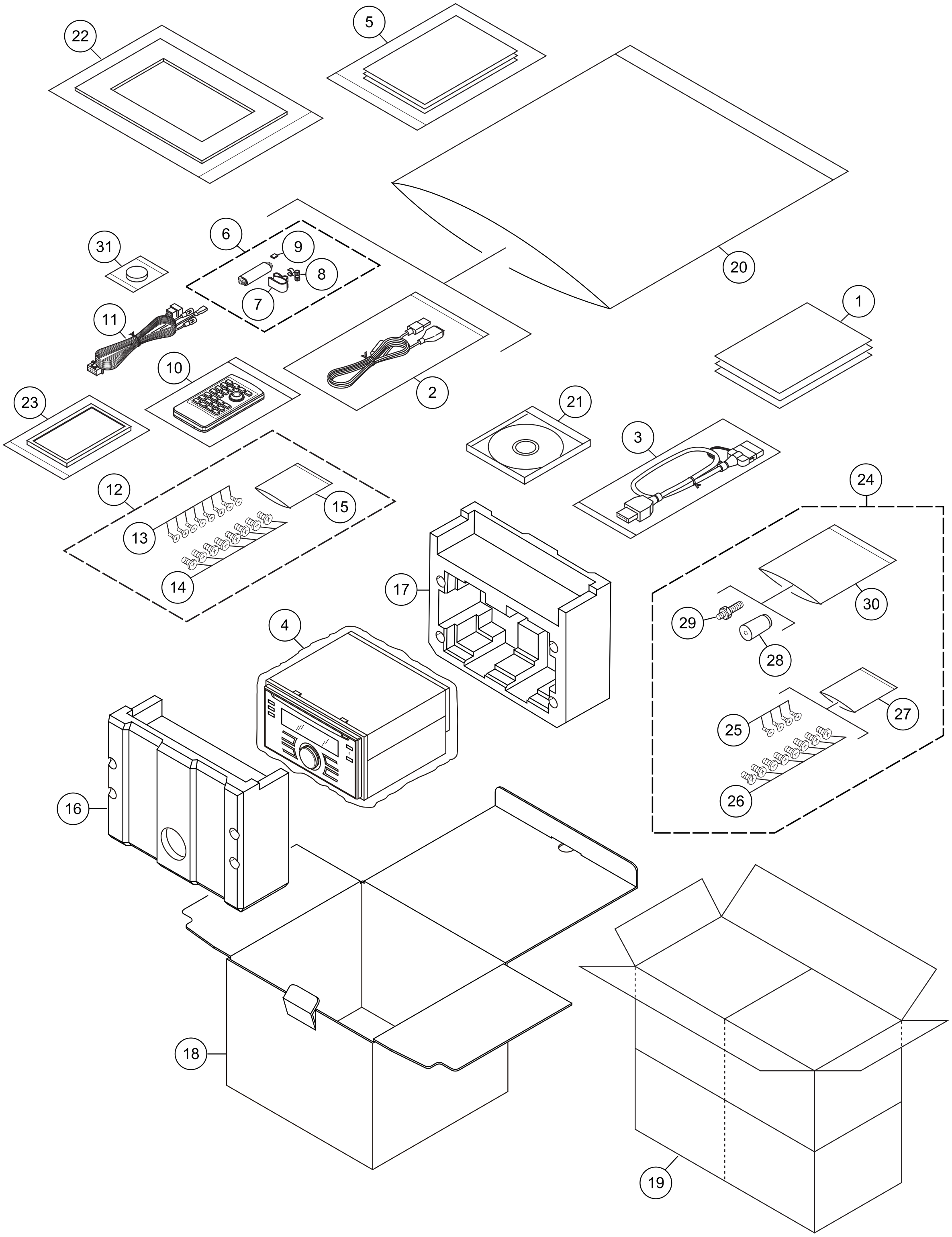
● PCL output

In the normal operation mode (with the detachable panel installed, the ACC switched ON, the standby mode cancelled), shift the TESTIN IC1(Pin 86) terminal to H.
The clock signal is output from the PCL terminal IC1(Pin 41).
The frequency of the clock signal is 625.0 kHz that is one 32th of the fundamental frequency.

9. EXPLODED VIEWS AND PARTS LIST

NOTES :
- *Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screw adjacent to▽ mark on the product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions,apply as you think it appropriate.)*

9.1 PACKING



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(1) PACKING SECTION PARTS LIST

Mark	No.	Description	FH-P800BT/XJ/UC	FH-P8000BT/XJ/UC	FH-P80BT/XJ/EW5	FH-P6050UB/XJ/ES
*	1-1	Caution Card	CRP1365	CRP1365	CRP1363	CRP1364
*	1-2	Caution Card	CRP1366	CRP1366	CRP1366	CRP1366
*	1-3	Warranty Card	CRY1070	CRY1246	CRY1265	Not used
*	1-4	Passport	Not used	Not used	CRY1268	Not used
	2	Cord Assy	CDP1026	CDP1026	CDP1040	CDP1040
	3	Cord Assy	CDP1041	Not used	Not used	Not used
	4	Cover	CEG1177	CEG1177	*CZE2980	CZE2959
	5-1	Polyethylene Bag	CEG1250	CEG1250	CEG1250	CEG1250
	5-2	Installation Manual	CZR5519	CZR5513	CZR5522	CZR5516
	5-3	Owner's Manual	CZR5540	CZR5537	CZR5525	CZR5532
	5-4	Owner's Manual	CZR5541	CZR5538	CZR5526	CZR5533
	5-5	Owner's Manual	CZR5542	CZR5539	CZR5527	CZR5534
	5-6	Owner's Manual	Not used	Not used	CZR5528	CZR5535
	5-7	Owner's Manual	Not used	Not used	CZR5529	CZR5536
	5-8	Owner's Manual	Not used	Not used	CZR5530	Not used
	5-9	Owner's Manual	Not used	Not used	CZR5531	Not used
*	5-10	Caution Card	CZR2977	CZR2977	CZR5510	CZR2977
	6	Microphone Assy	CPM1064	CPM1064	CPM1064	Not used
	7	Clip Holder	CZN5471	CZN5471	CZN5471	Not used
	8	Microphone Holder	CZN5472	CZN5472	CZN5472	Not used
	9	Cushion	CZN5473	CZN5473	CZN5473	Not used
	10	Remote Control Unit	CXC9115	CXC9115	CXC9115	CXC8885 (Remote Control Assy)
	11	Cord Assy	CZD5514	CZD5514	CZD5513	CZD5514
	12	Screw Assy	CZE2982	CZE2982	Not used	CZE2982
	13	Screw	BMZ50P080FTC	BMZ50P080FTC	Not used	BMZ50P080FTC
	14	Screw	CMZ50P080FTC	CMZ50P080FTC	Not used	CMZ50P080FTC
*	15	Polyethylene Bag	CZE2983	CZE2983	Not used	CZE2983
	16	Cushion	CZH6667	CZH6667	CZH6665	CZH6667
	17	Cushion	CZH6668	CZH6668	CZH6666	CZH6668
	18	Unit Box	CZH6669	CZH6671	CZH6663	CZH6673
	19	Contain Box	CZH6670	CZH6672	CZH6664	CZH6674
	20	Polyethylene Bag	CZE2963	CZE2963	CZE2962	CZE2962
	21	Owner's Manual CD-ROM	CZR5517	CZR5511	CZR5520	CZR5514
*	21-1	Owner's Manual	CRB2770	CRB2776	CRB2756	CRB2782
*	21-2	Owner's Manual	CRB2771	CRB2777	CRB2757	CRB2783
*	21-3	Owner's Manual	CRB2772	CRB2778	CRB2758	CRB2784
*	21-4	Owner's Manual	Not used	Not used	CRB2759	CRB2785
*	21-5	Owner's Manual	Not used	Not used	CRB2760	CRB2786
*	21-6	Owner's Manual	Not used	Not used	CRB2761	Not used
*	21-7	Owner's Manual	Not used	Not used	CRB2762	Not used
*	21-8	Art Work	CZR5518	CZR5512	CZR5521	CZR5515
	22	Panel	Not used	Not used	CNS9366	Not used
	23	Panel	CNS9475	CNS9475	CNS9365	CNS9475
	24	Screw Assy	Not used	Not used	CZE2981	Not used
	25	Screw	Not used	Not used	CMZ50P080FTC	Not used
	26	Screw	Not used	Not used	BMZ50P080FTC	Not used
*	27	Polyethylene Bag	Not used	Not used	CZE2983	Not used
	28	Bush	Not used	Not used	CNV3930	Not used
	29	Screw	Not used	Not used	CBA1650	Not used
*	30	Polyethylene Bag	Not used	Not used	CZE2985	Not used
*	31	Battery	Not used	Not used	Not used	CEX1065

(2) Language of Quick Start Guide

Mark	FH-P800BT/XJ/UC	FH-P8000BT/XJ/UC	FH-P80BT/XJ/EW5	FH-P6050UB/XJ/ES	Language
	CZR5540	CZR5537	CZR5525	CZR5532	English
	CZR5542	CZR5539	CZR5526	CZR5533	Spanish
	CZR5541	CZR5538	CZR5528	-----	French
	-----	-----	CZR5527	-----	German
	-----	-----	CZR5529	-----	Italian
	-----	-----	CZR5530	-----	Dutch
	-----	-----	CZR5531	-----	Russian
	-----	-----	-----	CZR5534	Portuguese(B)
	-----	-----	-----	CZR5535	Traditional Chinese
	-----	-----	-----	CZR5536	Arabic

(3) CONTENTS OF CD-ROM (Operation Manual)

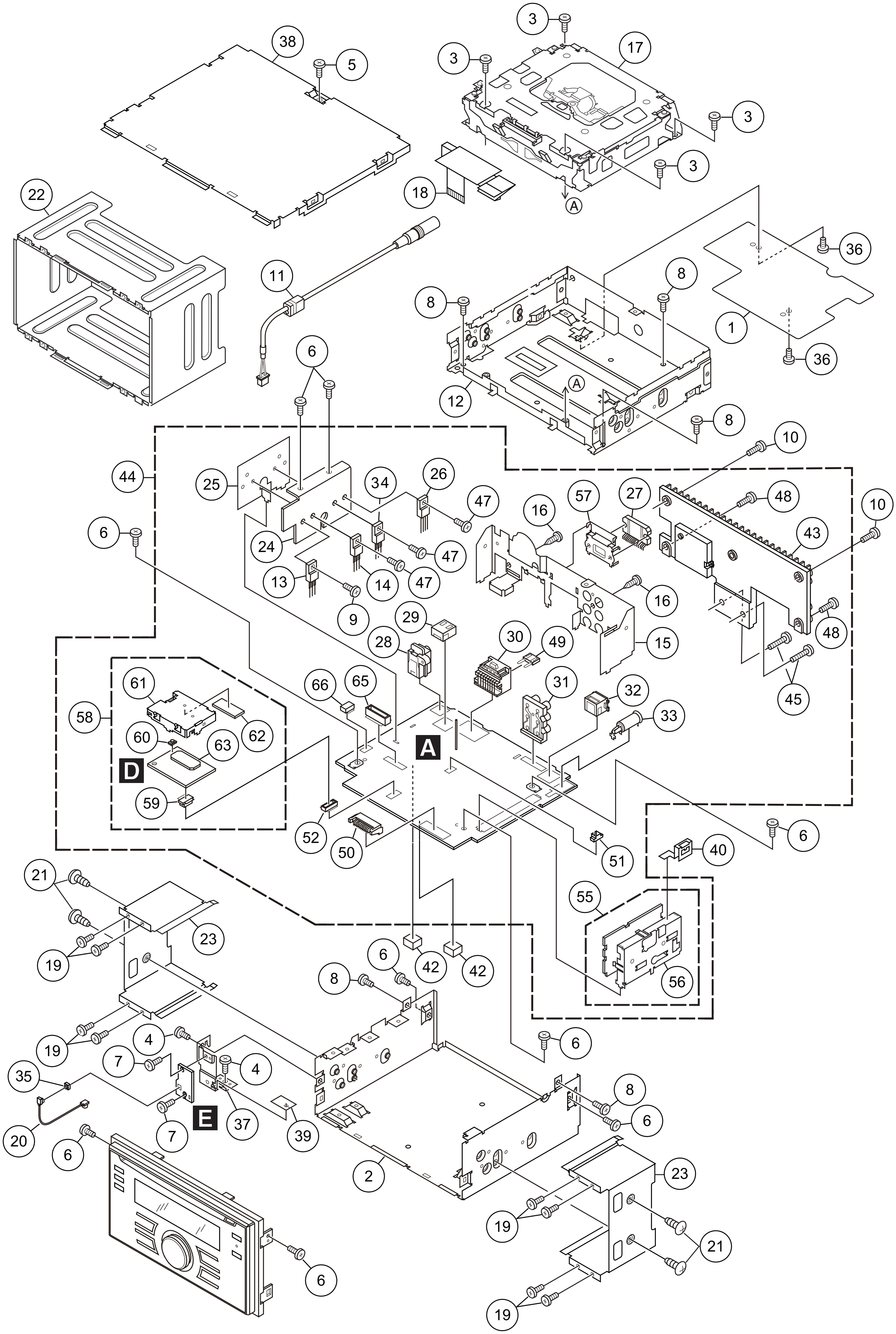
Mark	FH-P800BT/XJ/UC (CZR5517)	FH-P8000BT/XJ/UC (CZR5511)	FH-P80BT/XJ/EW5 (CZR5520)	FH-P6050UB/XJ/ES (CZR5514)	Language
*	CRB2770	CRB2776	CRB2756	CRB2782	English
*	CRB2772	CRB2778	CRB2757	CRB2783	Spanish
*	CRB2771	CRB2777	CRB2759	-----	French
*	-----	-----	CRB2758	-----	German
*	-----	-----	CRB2760	-----	Italian
*	-----	-----	CRB2761	-----	Dutch
*	-----	-----	CRB2762	-----	Russian
*	-----	-----	-----	CRB2784	Portuguese(B)
*	-----	-----	-----	CRB2785	Traditional Chinese
*	-----	-----	-----	CRB2786	Arabic

All operation manuals are supplied in PDF files by the CD-ROM. No printed papers are available.

Installation Manual

Part No.	Language
CZR5519,CZR5513	English, French, Spanish
CZR5522	English, Spanish, German, French, Italian, Dutch, Russian
CZR5516	English, Spanish, Portuguese(B), Traditional Chinese, Arabic

9.2 EXTERIOR(1)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(1) EXTERIOR(1) SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Heat Sink	See Contrast table(2)
	2	Chassis	See Contrast table(2)
	3	Screw	BMA26P040FTC
	4	Screw	BSZ26P050FTC
	5	Screw	BSZ26P050FTC
	6	Screw	BSZ26P050FTC
	7	Screw	See Contrast table(2)
	8	Screw	BSZ26P050FTC
	9	Screw	See Contrast table(2)
	10	Screw	BSZ26P140FTC
	11	Cord Assy	See Contrast table(2)
	12	Chassis Unit	CZX6628
	13	Transistor(Q670)	See Contrast table(2)
	14	Transistor(Q250)	2SD2396
	15	Chassis	See Contrast table(2)
	16	Screw	BPZ26P060FTC
	17	CD Mechanism Module(S10.5)	CXK5775
	18	Cord Assy	CZD5512
	19	Screw	See Contrast table(2)
	20	Cord Assy	See Contrast table(2)
	21	Screw	See Contrast table(2)
	22	Holder	See Contrast table(2)
	23	Holder	See Contrast table(2)
	24	Heat Sink	CZN8389
	25	Holder	CZN8388
	26	IC(IC660)	NJM2388F84
	27	IC(IC550)	PA2029A
	28	Jack(JA150)	See Contrast table(2)
	29	Connector(JA290)	CKS5669
	30	Connector(JA600)	CKM1376
	31	Pin Jack(JA450)	See Contrast table(2)
	32	Connector(JA750)	CKS3408
	33	Antenna Jack(JA100)	CKX1056
	34	Transistor(Q650)	2SD2396

Mark	No.	Description	Part No.
	35	Connector(CN990)	See Contrast table(2)
	36	Screw	See Contrast table(2)
	37	Holder	See Contrast table(2)
	38	Top Cover	CZN8397
	39	Sheet	See Contrast table(2)
	40	Plate	CZN8407
	41	•••••	
	42	Cushion	CZN8409
	43	Heat Sink	CZN8384
	44	Combi PWB Unit	See Contrast table(2)
	45	Screw	BMZ26P180FTB
	46	•••••	
	47	Screw	BSZ26P080FTC
	48	Screw	BSZ26P140FTC
⚠	49	Fuse(10 A)	CEK1208
	50	Plug(CN80)	CKS3538
	51	Connector(CN300)	See Contrast table(2)
	52	Connector(CN800)	See Contrast table(2)
	53	•••••	
	54	•••••	
	55	FM/AM Tuner Unit	See Contrast table(2)
	56	Holder	CND4324
	57	Bracket	CZN8396
	58	Bluetooth Unit	See Contrast table(2)
	59	Connector(CN76)	See Contrast table(2)
	60	Connector(CN1)	See Contrast table(2)
	61	Shield	See Contrast table(2)
	62	Sheet	See Contrast table(2)
	63	Bluetooth Module(Y1)	See Contrast table(2)
	64	•••••	
	65	Connector(CN200)	CZK2967
	66	Connector(CN810)	See Contrast table(2)

(2) CONTRAST TABLE

FH-P800BT/XJ/UC, FH-P8000BT/XJ/UC, FH-P80BT/XJ/EW5 and FH-P6050UB/XJ/ES are constructed the same except for the following:

Mark	No.	Description	FH-P800BT/XJ/UC	FH-P8000BT/XJ/UC	FH-P80BT/XJ/EW5	FH-P6050UB/XJ/ES
	1	Heat Sink	CZN8408	CZN8408	CZN8408	Not used
	2	Chassis	CZN8380	CZN8380	CZN8411	CZN8398
	7	Screw	BSZ26P080FTC	BSZ26P080FTC	BSZ26P080FTC	Not used
	9	Screw	BSZ26P080FTC	BSZ26P080FTC	BSZ26P080FTC	Not used
	11	Cord Assy	CDE8692	CDE8692	CDE8692	Not used
	13	Transistor(Q670)	2SD2396	2SD2396	2SD2396	Not used
	15	Chassis	CZN8385	CZN8385	CZN8385	CZN8386
	19	Screw	Not used	Not used	BMZ30P060FTC	Not used
	20	Cord Assy	CZD5516	CZD5516	CZD5516	Not used
	21	Screw	Not used	Not used	CMZ50P080FTC	Not used
	22	Holder	Not used	Not used	CND4337	Not used
	23	Holder	Not used	Not used	CND4338	Not used
	28	Jack(JA150)	YKS5001	YKS5001	YKS5001	XKS7006

Mark	No.	Description	FH-P800BT/XJ/UC	FH-P8000BT/XJ/UC	FH-P80BT/XJ/EW5	FH-P6050UB/XJ/ES
	31	Pin Jack(JA450)	XKB7001	XKB7001	XKB7001	CKB1051
	35	Connector(CN990)	CKS5749	CKS5749	CKS5749	Not used
	36	Screw	BSZ26P040FTB	BSZ26P040FTB	BSZ26P040FTB	Not used
	37	Holder	CZN8395	CZN8395	CZN8395	Not used
	39	Sheet	CZN8400	CZN8400	CZN8400	Not used
	44	Combi PWB Unit	CZW5569	CZW5570	CZW5568	CZW5571
	51	Connector(CN300)	CKS4822	CKS4822	CKS4822	Not used
	52	Connector(CN800)	CKS5321	CKS5321	CKS5321	Not used
	55	FM/AM Tuner Unit	CWE2098	CWE2098	CWE2097	CWE2098
	58	Bluetooth Unit	CWN3394	CWN3394	CWN3394	Not used
	59	Connector(CN79)	CKS5320	CKS5320	CKS5320	Not used
	60	Connector(CN1)	CKS5749	CKS5749	CKS5749	Not used
	61	Shield	CND3134	CND3134	CND3134	Not used
	62	Sheet	CNM9598	CNM9598	CNM9598	Not used
	63	Bluetooth Module(Y1)	CWX3619	CWX3619	CWX3619	Not used
	66	Connector(CN810)	CZK2968	CZK2968	CZK2968	Not used

A

B

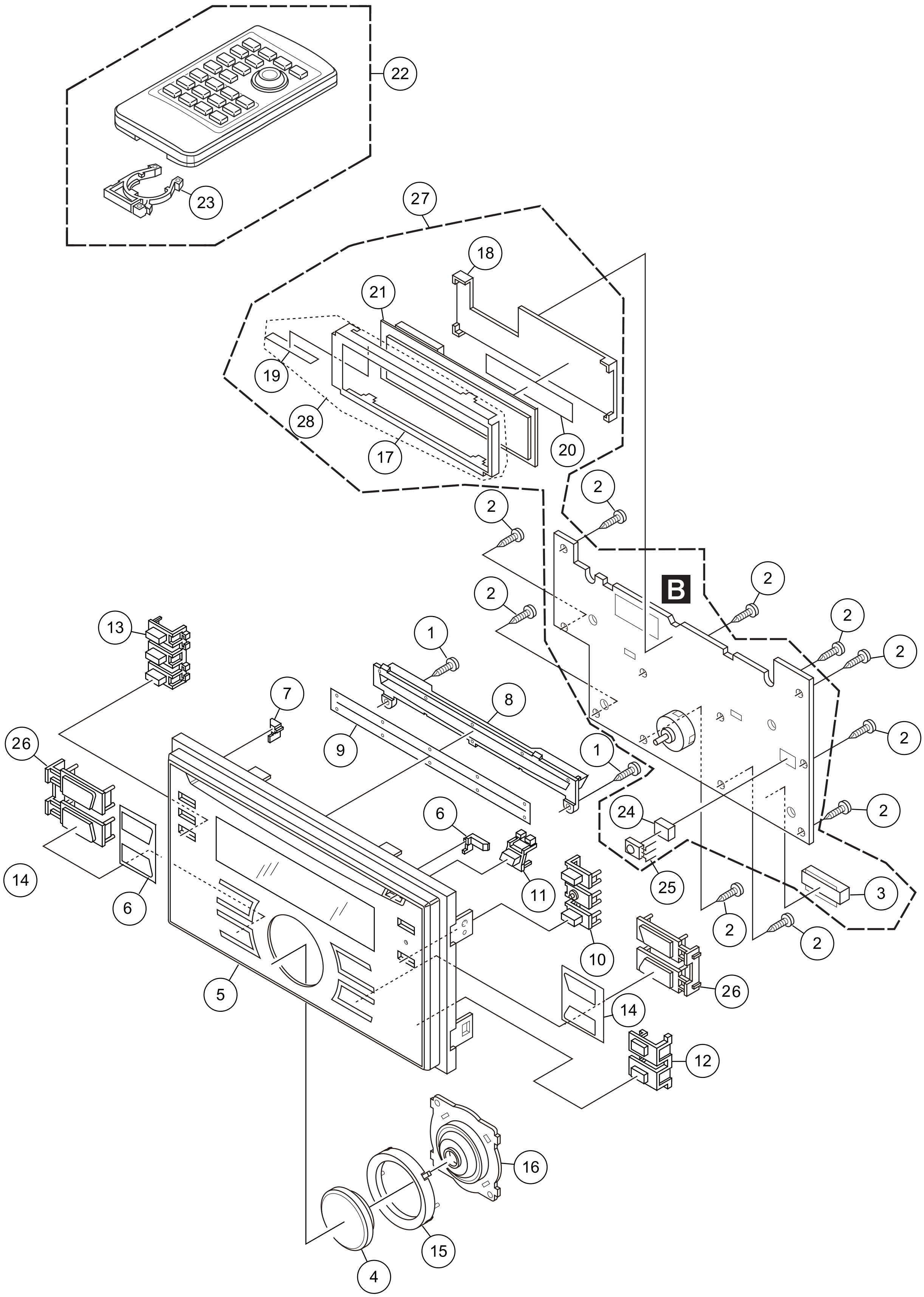
C

D

E

F

9.3 EXTERIOR(2)


22
23
27
18
21
19
28
17
20
2
2
B
2
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13
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8
26
9
1
2
6
24
14
6
11
25
3
10
2
2
5
26
14
12
16
15
4

(1) EXTERIOR(2) SECTION PARTS LIST

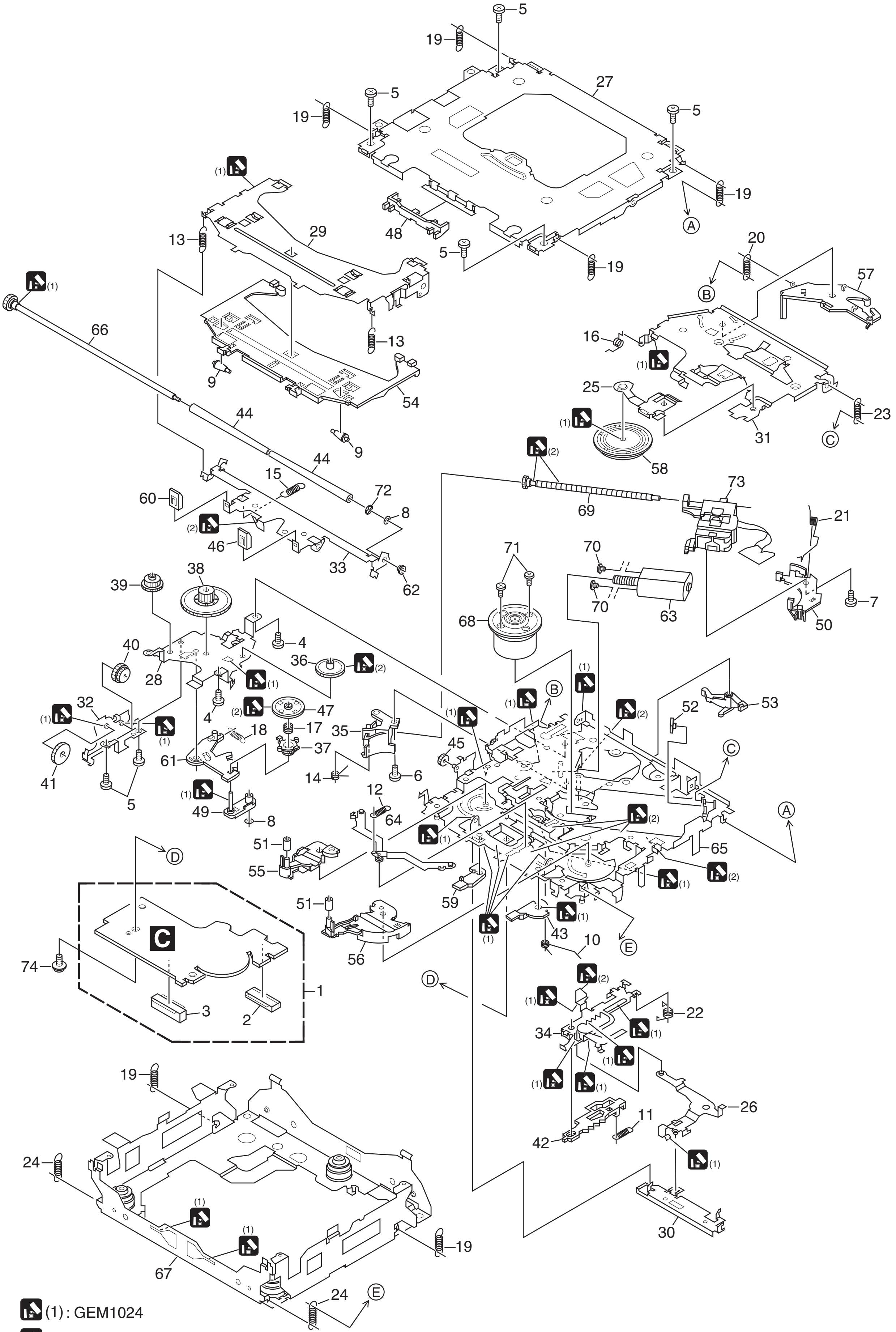
Mark	No.	Description	Part No.
	1	Screw	BPZ20P080FTC
	2	Screw	BPZ20P080FTC
	3	Socket(CN901)	CKS3551
	4	Knob Unit	See Contrast table(2)
	5	Grille Unit	See Contrast table(2)
	6	Illuminator	CZN8376
	7	Illuminator	CZN8375
	8	Disc Cover	CZN8374
	9	Dust Cover	CZN6900
	10	Button	See Contrast table(2)
	11	Button	CZN8362
	12	Lens	See Contrast table(2)
	13	Button	CZN8357
	14	Frame Button	See Contrast table(2)
	15	Ring	See Contrast table(2)
	16	Illumination Unit	CZX6626
	17	Case	CZN8378
	18	Holder	CZN8377
	19	Insulator	CZN8410
	20	Tape	CZN8399
	21	OEL Module	MXS8252
	22	Remote Control Unit	See Contrast table(2)
	23	Cover	See Contrast table(2)
	24	Cushion	CZN8379
	25	IC(IC901)	GP1UX51RX
	26	Hinge Unit	CZX6625
	27	Keyboard Unit	See Contrast table(2)
	28	Case Unit	CZX6631

(2) CONTRAST TABLE

FH-P800BT/XJ/UC, FH-P8000BT/XJ/UC, FH-P80BT/XJ/EW5 and FH-P6050UB/XJ/ES are constructed the same except for the following:

Mark	No.	Description	FH-P800BT/XJ/UC	FH-P8000BT/XJ/UC	FH-P80BT/XJ/EW5	FH-P6050UB/XJ/ES
	4	Knob Unit	CZX6624	CZX6632	CZX6624	CZX6624
	5	Grille Unit	CZX6634	CZX6633	CZX6627	CZX6635
	10	Button	CZN8359	CZN8359	CZN8358	CZN8359
	12	Lens	CZN8373	CZN8373	CZN8373	Not used
	14	Frame Button	CZN8353	CZN8354	CZN8354	CZN8353
	15	Ring	CZN8355	CZN8356	CZN8356	CZN8355
	22	Remote Control Unit	CXC9115	CXC9115	CXC9115	CXC8885 (Remote Control Assy)
	23	Cover	CZN5357	CZN5357	CZN5357	CNS7068
	27	Keyboard Unit	CZW5574	CZW5574	CZW5573	CZW5575

9.4 CD MECHANISM MODULE


5
19
27
5
19
5
19
A
(1)
29
13
48
5
19
20
57
B
(1)
66
13
16
(1)
9
54
25
(1)
23
44
31
C
9
58
44
(2)
15
72
73
60
8
69
(2)
21
46
33
71
70
C
62
38
39
7
63
70
68
50
40
4
36
(2)
28
(1)
(1)
32
B
(1)
53
(1)
(1)
4
(2)
47
52
(2)
17
18
35
37
C
45
61
41
14
6
5
(1)
12
A
49
8
64
(2)
(1)
51
65
D
55
(2)
(1)
59
51
(1)
43
C
(1)
10
E
74
56
(2)
1
D
(1)
22
3
2
34
(1)
E
(1)
19
(1)
(1)
26
11
42
24
(1)
(1)
(1)
30
19
67
24
E

(1) : GEM1024

(2) : GEM1045

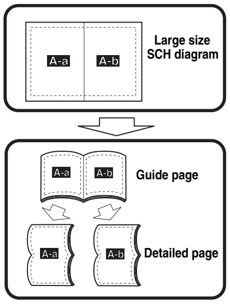
CD MECHANISM MODULE SECTION PARTS LIST

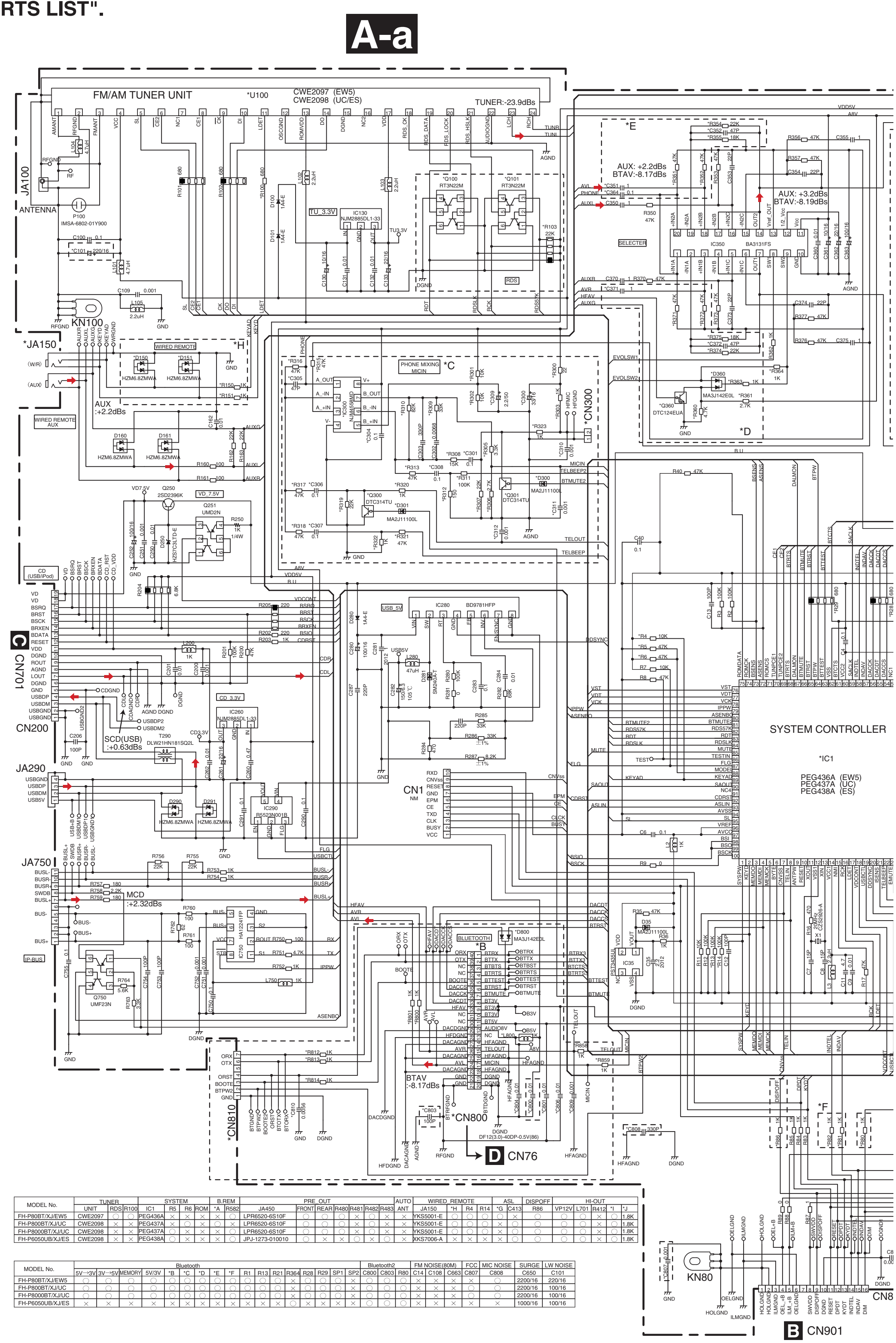
Mark	No.	Description	Part No.
	1	CD Core Unit(S10.5COMP2-iPod-C2)	CWX3624
	2	Connector(CN101)	CKS4182
	3	Connector(CN701)	CKS4186
	4	Screw	BMZ20P025FTC
	5	Screw	BSZ20P040FTC
	6	Screw(M2 x 3)	CBA1511
	7	Screw(M2 x 4)	CBA1835
	8	Washer	CBF1038
	9	Roller	CNV9499
	10	Spring	CBH2609
	11	Spring	CBH2612
	12	Spring	CBH2614
	13	Spring	CBH2616
	14	Spring	CBH2617
	15	Spring	CBH2620
	16	Spring	CBH2855
	17	Spring	CBH2937
	18	Spring	CBH2735
	19	Spring	CBH2854
	20	Spring	CBH2642
	21	Spring	CBH2856
	22	Spring	CBH2857
	23	Spring	CBH2860
	24	Spring	CBH2861
	25	Spring	CBL1686
	26	Arm	CND1909
	27	Frame	CND2582
	28	Bracket	CND2583
	29	Arm	CND3831
	30	Lever	CND2585
	31	Arm	CND2586
	32	Bracket	CND2587
	33	Arm	CND2588
	34	Lever	CND2589
	35	Holder	CNV7201
	36	Gear	CNV7207
	37	Gear	CNV7208
	38	Gear	CNV7209
	39	Gear	CNV7210
	40	Gear	CNV7211
	41	Gear	CNV7212
	42	Rack	CNV7214
	43	Arm	CNV7216
	44	Roller	CNV7218
	45	Gear	CNV7219
	46	Guide	CNV7361
	47	Gear	CNV7595
	48	Guide	CNV7799
	49	Arm	CNV7805
	50	Rack	CNV8342
	51	Roller	CNV8343
	52	Holder	CNV8344
	53	Arm	CNV8345
	54	Guide	CNV9498
	55	Arm	CNV8348
	56	Arm	CNV8349
	57	Arm	CNV8350
	58	Clamper	CNV8365
	59	Arm	CNV8386
	60	Guide	CNV8396
	61	Arm	CNV8413
	62	Collar	CNV8938
	63	Motor Unit(M2)	CXC4026
	64	Arm Unit	CXC4027
	65	Chassis Unit	CXC4028
	66	Gear Unit	CXC4029
	67	Frame Unit	CXC4031
	68	Motor Unit(M1)	CXC7134
	69	Screw Unit	CXC6359
	70	Screw	JFZ20P020FTC
	71	Screw	JGZ17P022FTC
	72	Washer	YE20FTC
	73	Pickup Unit(P10.5)(Service)	CXX1942
	74	Screw	IMS26P030FTC

10. SCHEMATIC DIAGRAM

10.1 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to " EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".

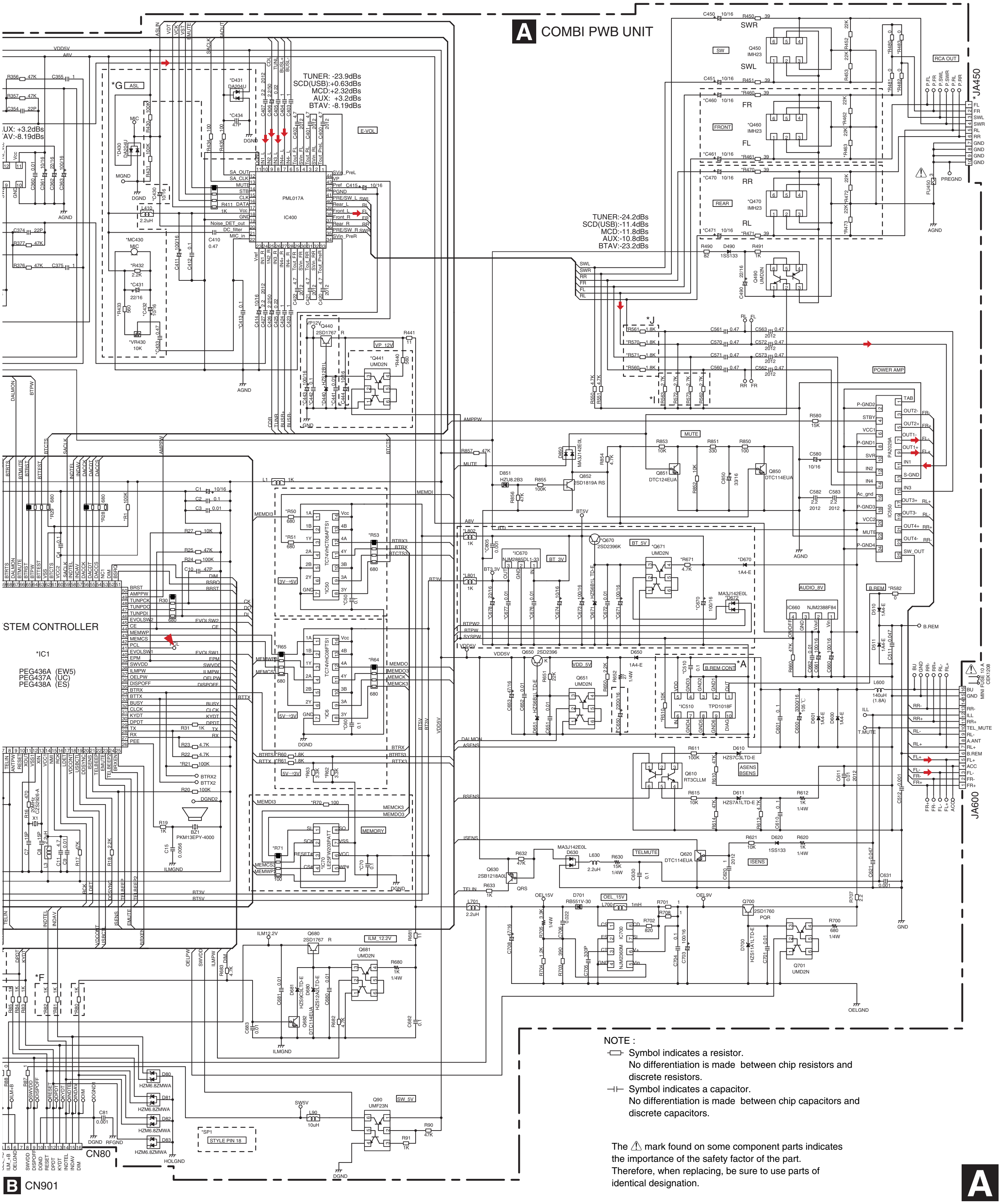

A-a
A-b
Large size SCH diagram
A-a
A-b
Guide page
A-a
A-b
Detailed page


A-a
FM/AM TUNER UNIT
*U100
CWE2097 (EW5)
CWE2098 (UC/ES)
TUNER:-23.9dBs
JA100
ANTENNA
P100
IMSA-6802-01Y900
KN100
*JA150
WIRED REMOTE
*H
AUX :+2.2dBs
WIRED REMOTE AUX
CD (USB/iPod)
C CN701
CN200
SCD(USB) :+0.63dBs
JA290
JA750
MCD :+2.32dBs
IP-BUS
IC750 HA12241FP
Q750 UMF23N
PHONE MIXING MICIN
*C
*CN300
IC280 BD9781HFP
USB_5V
CD_3.3V
IC260 NJM2885DL1-33
IC290 R5523N001B
IC130 NJM2885DL1-33
*Q100 RT3N22M
*Q101 RT3N22M
RDS
*E
AUX: +2.2dBs BTAV:-8.17dBs
AUX: +3.2dBs BTAV:-8.19dBs
SELECTER
IC350 BA3131FS
*D
CN1
BLUETOOTH *B
BTAV :-8.17dBs
*CN800
DF12(3.0)-40DP-0.5V(86)
D CN76
*CN810
SYSTEM CONTROLLER
*IC1
PEG436A (EW5)
PEG437A (UC)
PEG438A (ES)
IC35
*F
KN80
B CN901
CN8

MODEL No.	TUNER			SYSTEM				B.REM		PRE_OUT							AUTO	WIRED_REMOTE				ASL		DISPOFF	HI-OUT				
	UNIT	RDS	R100	IC1	R5	R6	ROM	*A	R582	JA450	FRONT	REAR	R480	R481	R482	R483	ANT	JA150	*H	R4	R14	*G	C413	R86	VP12V	L701	R412	*I	*J
FH-P80BT/XJ/EW5	CWE2097	○	○	PEG436A	×	×	×	×	○	LPR6520-6S10F	○	○	○	×	○	×	×	YKS5001-E	○	○	○	○	×	○	○	○	×	○	1.8K
FH-P800BT/XJ/UC	CWE2098	×	×	PEG437A	×	○	×	○	×	LPR6520-6S10F	○	○	○	×	○	×	×	YKS5001-E	○	○	○	×	○	○	○	○	×	○	1.8K
FH-P8000BT/XJ/UC	CWE2098	×	×	PEG437A	○	×	×	×	○	LPR6520-6S10F	○	○	○	×	○	×	×	YKS5001-E	○	○	○	×	○	○	○	○	×	○	1.8K
FH-P6050UB/XJ/ES	CWE2098	×	×	PEG438A	○	×	×	×	○	JPJ-1273-010010	○	×	×	○	×	○	×	XKS7006-A	×	×	×	×	○	○	○	○	×	○	1.8K

MODEL No.	Bluetooth																	Bluetooth2			FM NOISE(80M)			FCC	MIC NOISE	SURGE	LW NOISE
	5V→3V	3V→5V	MEMORY	5V/3V	*B	*C	*D	*E	*F	R1	R13	R21	R364	R28	R29	SP1	SP2	C800	C803	R80	C14	C108	C663	C807	C808	C650	C101
FH-P80BT/XJ/EW5	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	×	○	○	○	×	×	×	×	○	2200/16	220/16
FH-P800BT/XJ/UC	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	×	○	○	○	×	×	×	○	○	2200/16	100/16
FH-P8000BT/XJ/UC	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	×	○	○	○	×	×	×	○	○	2200/16	100/16
FH-P6050UB/XJ/ES	×	×	×	×	×	×	×	×	×	×	×	×	○	×	×	×	×	○	○	○	×	×	×	×	×	1000/16	100/16

A-b


A COMBI PWB UNIT
TUNER: -23.9dBs
SCD(USB):+0.63dBs
MCD:+2.32dBs
AUX: +3.2dBs
BTAV: -8.19dBs
E-VOL
PML017A
IC400
TUNER:-24.2dBs
SCD(USB):-11.4dBs
MCD:-11.8dBs
AUX:-10.8dBs
BTAV:-23.2dBs
SWR
SWL
FR
FL
RR
RL
RCA OUT
JA450
POWER AMP
PA2029A
IC550
MUTE
AUDIO_8V
NJM2388F84
IC660
B.REM
TPD1018F
IC510
MEMORY
IC70
TELMUTE
ISENS
ASENS
STEM CONTROLLER
*IC1
PEG436A (EW5)
PEG437A (UC)
PEG438A (ES)
BZ1
PKM13EPY-4000
JA600
MINI FUSE 10 A
CEK1208
CN80
B CN901
STYLE PIN 18
ILM_12.2V
SW_5V
VDD_5V
B.REM CONT
BT_5V
BT_3V
OEL_15V
VP_12V
5V→3V
3V→5V

NOTE :

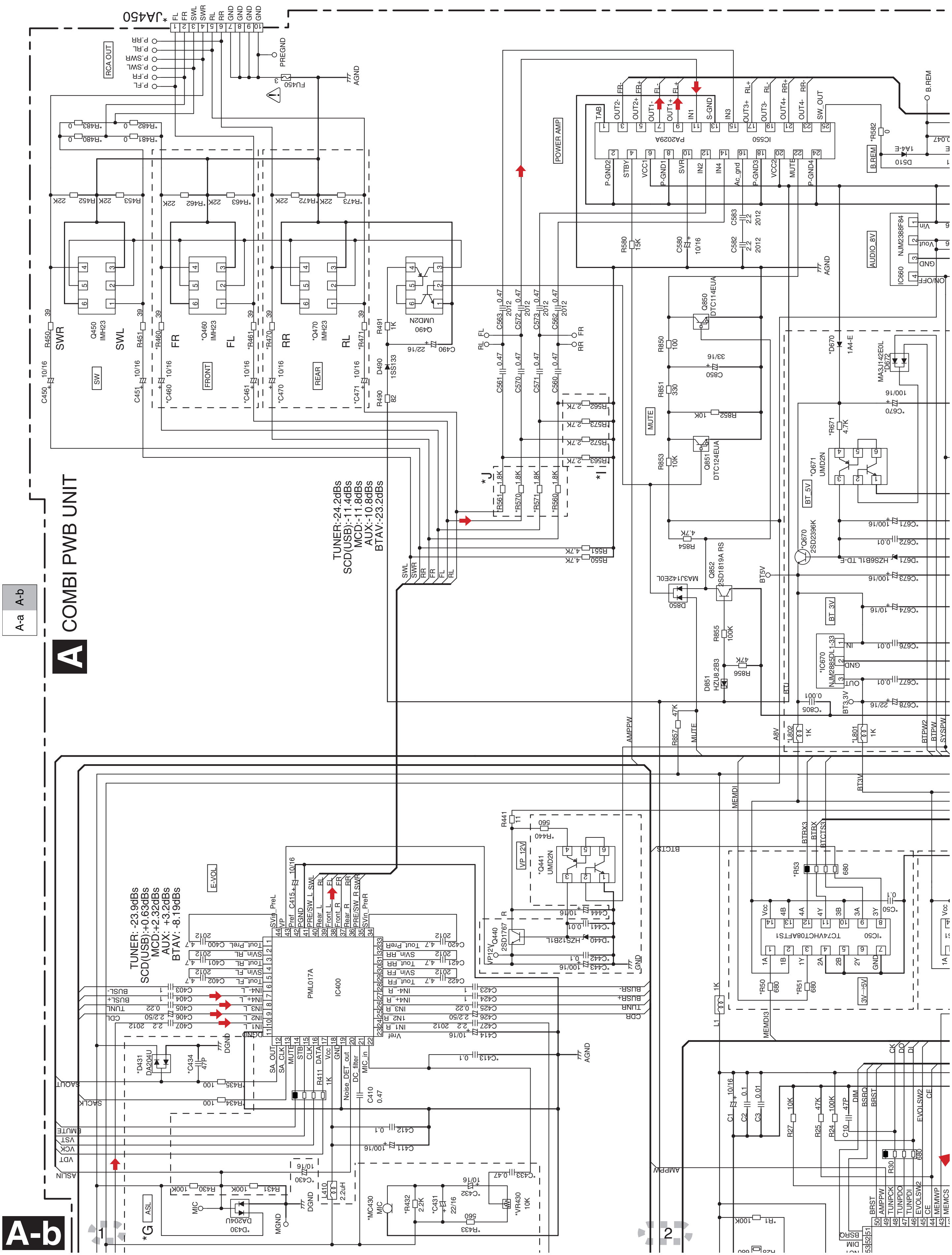
⊏⊐ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

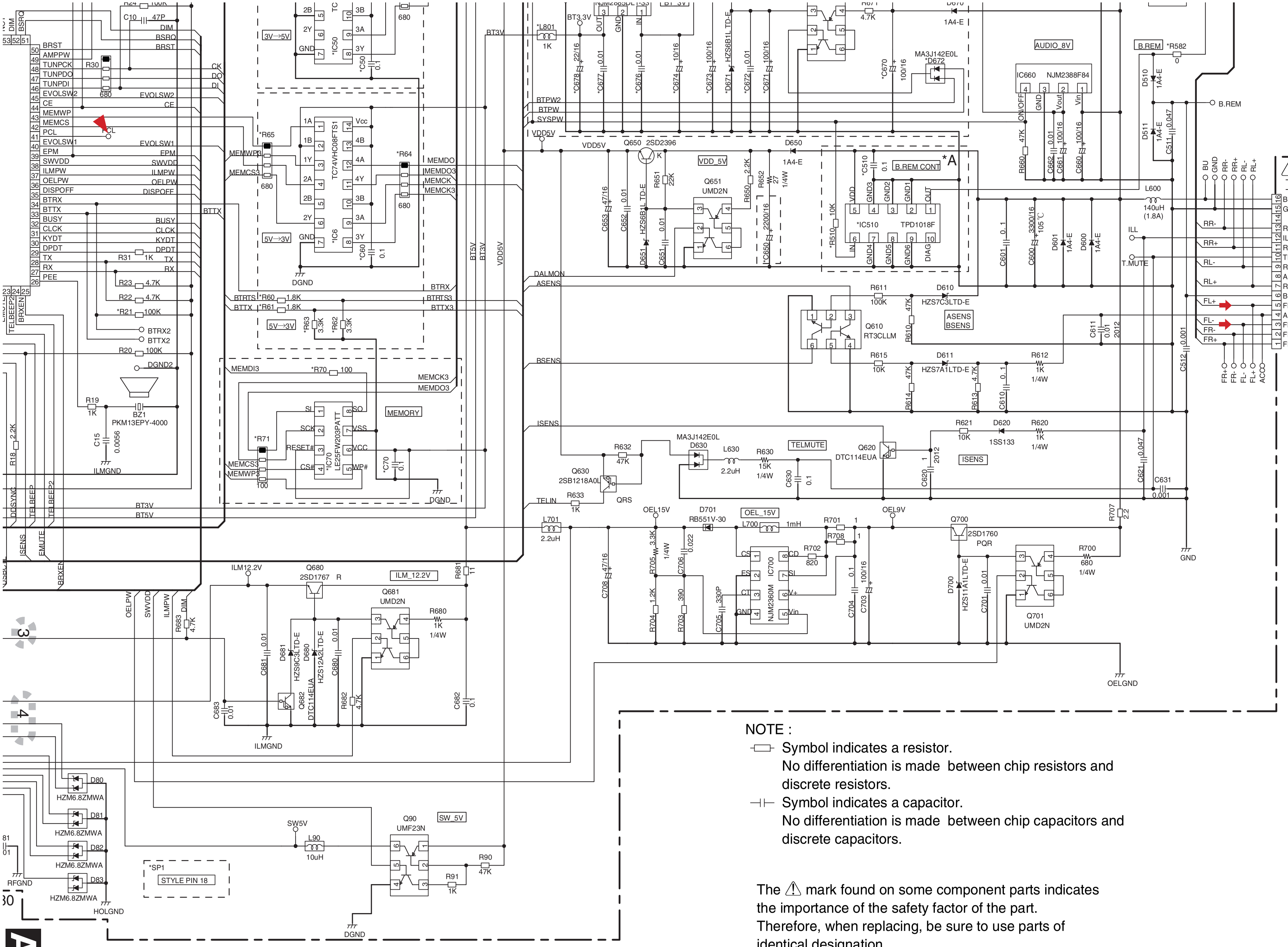
⊣⊢ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

A

A B C D E F


A COMBI PWB UNIT
A-a
A-b
A-b
JA450
RCA OUT
P.RR
P.RL
P.SWR
P.SWL
P.FR
P.FL
FU450
PREGND
AGND
POWER AMP
IC550
PA2029A
TAB
OUT2-
OUT2+
OUT1-
OUT1+
IN1
S-GND
IN3
OUT3+
OUT3-
OUT4+
OUT4-
SW_OUT
P-GND2
STBY
VCC1
P-GND1
SVR
IN2
IN4
Ac_grd
P-GND3
VCC2
MUTE
P-GND4
B.REM
D510
1A4-E
R582
AUDIO 8V
IC660
NJM2388F84
Vin
Vout
GND
ON/OFF
Q850
DTC114EUA
Q851
DTC124EUA
MUTE
Q852
2SD1819A RS
D850
MA3J142E0L
D851
HZU8.2B3
BT5V
BT_5V
BT_3V
BT3.3V
*IC670
NJM2885DL1-33
Q670
2SD2396K
*Q671
UMD2N
D671
HZS6BL1TD-E
*D670
D672
MA3J142E0L
Q450
IMH23
*Q460
IMH23
*Q470
IMH23
Q490
UMD2N
D490
1SS133
SW
FRONT
REAR
SWR
SWL
FR
FL
RR
RL
TUNER:-24.2dBs
SCD(USB):-11.4dBs
MCD:-11.8dBs
AUX:-10.8dBs
BTAV:-23.2dBs
*J
*I
IC400
PML017A
E-VOL
TUNER:-23.9dBs
SCD(USB):+0.63dBs
MCD:+2.32dBs
AUX:+3.2dBs
BTAV:-8.19dBs
*Q441
UMD2N
VP_12V
Q440
2SD1767
*D440
HZS12B1L
*IC50
TC74VHCT08AFTS1
3V→5V
MEMDI
MEMDI3
AMPPW
BTCTS3
BTRX3
BTRX
BT3V
ASL
MIC
*MC430
*VR430
*D430
DA204U
*D431
DA204U
MGND
DGND
L410
2.2uH
L1
SAOUT
SACLK
EMUTE
VST
VCK
VDT
ASLIN
*G
BSRQ
DIM
BRST
CE
EVOLSW2
MEMWP
MEMCS
TUNPCK
TUNPDO
TUNPDI
1
2


JA600
MINI FUSE 10 A
CEK1208
BU
GND
RR-
ILL
RR+
TEL_MUTE
RL-
A.ANT
RL+
B.REM
FL+
ACC
FL-
FR-
FR+
B.REM
L600
140uH
(1.8A)
T.MUTE
IC660 NJM2388F84
AUDIO_8V
ON/OFF
Vout
Vin
*IC510 TPD1018F
B.REM CONT
*A
VDD
DIAG
Q650 2SD2396
Q651 UMD2N
VDD_5V
D650
1A4-E
Q610 RT3CLLM
ASENS
BSENS
D610 HZS7C3LTD-E
D611 HZS7A1LTD-E
Q620 DTC114EUA
TELMUTE
ISENS
D620 1SS133
D630 MA3J142E0L
L630 2.2uH
Q630 2SB1218A0L
QRS
OEL15V
OEL_15V
OEL9V
D701 RB551V-30
L700 1mH
IC700 NJM2360M
Q700 2SD1760 PQR
D700 HZS11A1LTD-E
Q701 UMD2N
OELGND
L701 2.2uH
ILM12.2V
ILM_12.2V
Q680 2SD1767 R
Q681 UMD2N
D681 HZS9C3LTD-E
D680 HZS12A2LTD-E
Q682 DTC114EUA
ILMGND
SW5V
SW_5V
L90 10uH
Q90 UMF23N
DGND
D80 HZM6.8ZMWA
D81 HZM6.8ZMWA
D82 HZM6.8ZMWA
D83 HZM6.8ZMWA
HOLGND
RFGND
*SP1
STYLE PIN 18
BZ1 PKM13EPY-4000
*IC6 TC74VHC08FTS1
*IC50
*IC70 LE25FW203PATT
MEMORY
3V→5V
5V→3V
VDD5V
BT3V
BT5V
MEMDO
MEMDO3
MEMCK
MEMCK3
MEMCS3
MEMWP3
MEMDI3
BTRTS
BTTX
BTRX
BTRTS3
BTTX3
BRST
AMPPW
TUNPCK
TUNPDO
TUNPDI
EVOLSW2
CE
MEMWP
MEMCS
PCL
EVOLSW1
EPM
SWVDD
ILMPW
OELPW
DISPOFF
BUSY
CLCK
KYDT
DPDT
TX
RX
PEE
DALMON
TELIN
BRXEN
EMUTE
TELBEEP
TELBEEP2
DDSYNC
BTPW2
BTPW
SYSPW

NOTE :

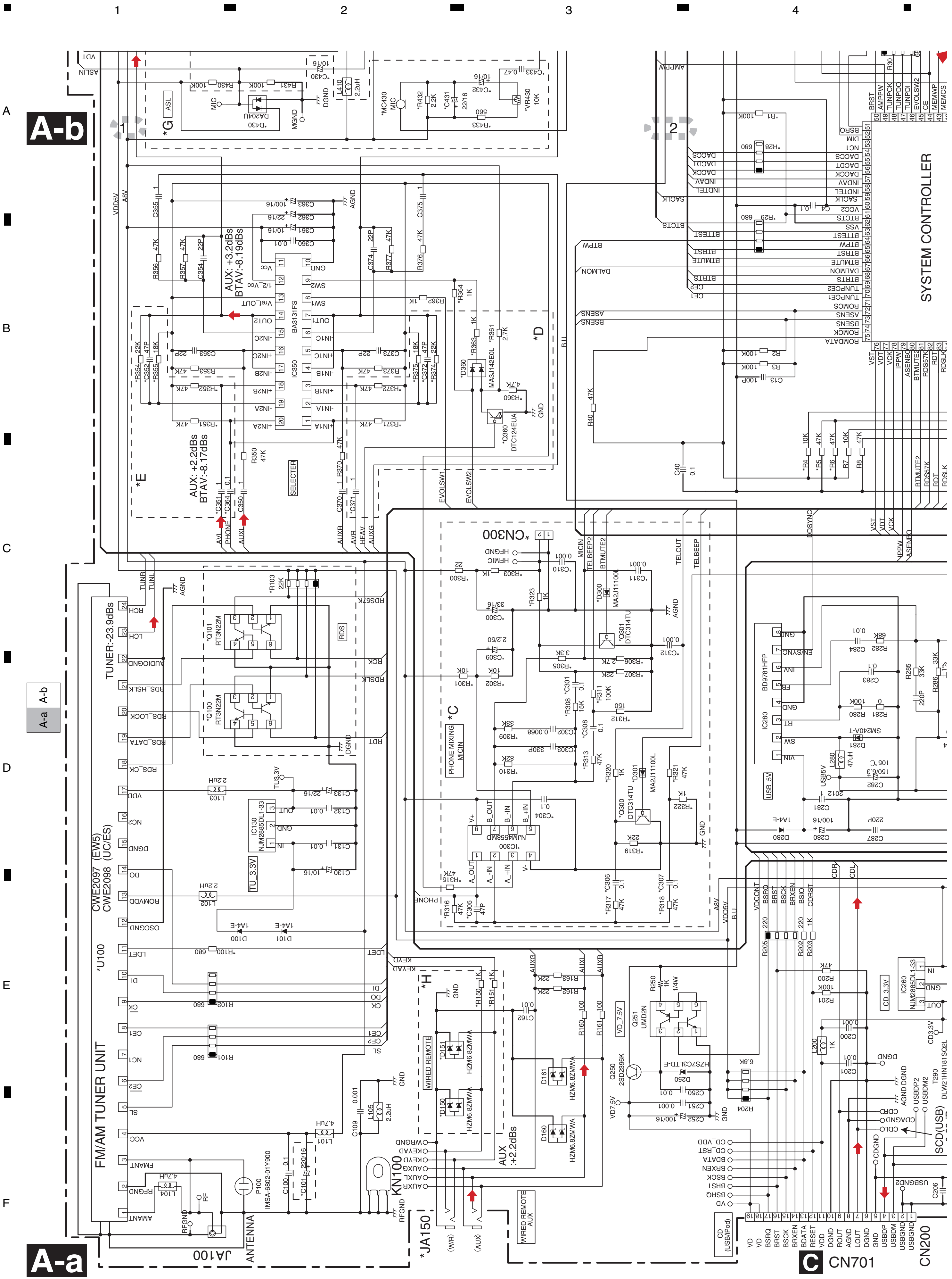
▭ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

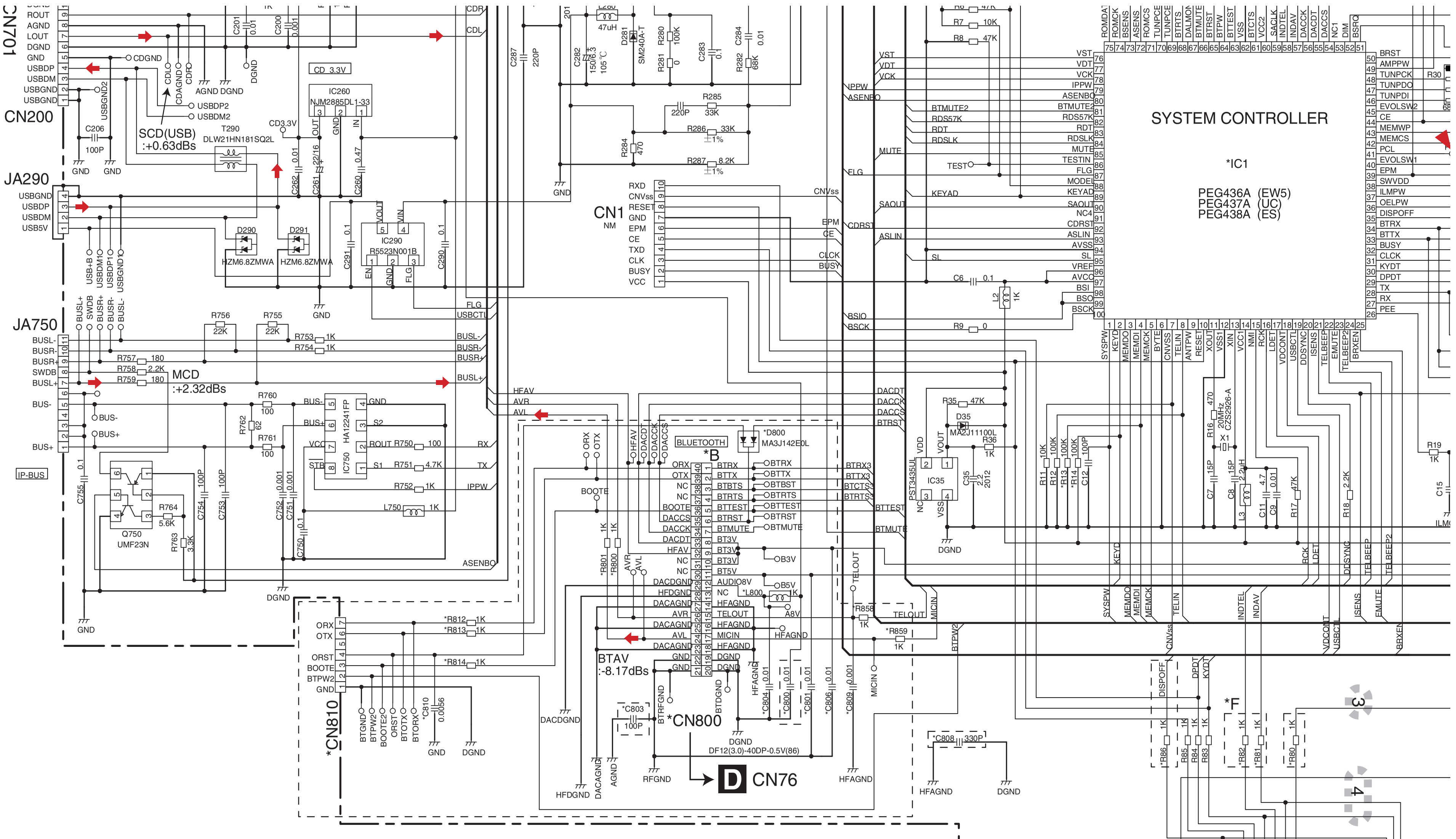
⊣⊢ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

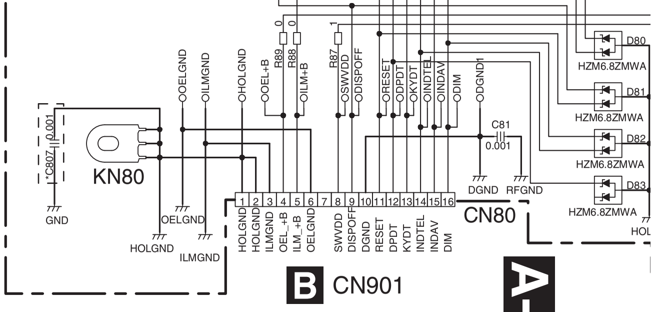
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

A-a	A-b

A-b


A-b
A-a
1
2
3
4
A
B
C
D
E
F
FM/AM TUNER UNIT
*U100
CWE2097 (EW5)
CWE2098 (UC/ES)
TUNER:-23.9dBs
ANTENNA
JA100
P100
IMSA-6602-01Y900
SYSTEM CONTROLLER
BA3131FS
IC350
SELECTER
AUX: +3.2dBs
BTAV:-8.19dBs
AUX: +2.2dBs
BTAV:-8.17dBs
*E
*D
*G
ASL
*C
PHONE MIXING
MICIN
NJM4558MD
IC300
*CN300
BD9781HFP
IC280
USB_5V
NJM2885DL1-33
IC130
TU_3.3V
IC260
CD_3.3V
VD_7.5V
*H
WIRED REMOTE
WIRED REMOTE
AUX
AUX
:+2.2dBs
KN100
*JA150
(W/R)
(AUX)
CD
(USB/iPod)
CN701
CN200
SCD(USB)
RDS
Q250
2SD2396K
Q251
UMD2N
D250
HZS7C3LTD-E
D150
D151
D160
D161
HZM6.8ZMWA
Q360
DTC124EUA
D360
MA3J142E0L
Q300
Q301
DTC314TU
D300
D301
MA2J1110L
Q100
Q101
RT3N22M
D280
D281
SM240A-T
1A4-E


SYSTEM CONTROLLER
*IC1
PEG436A (EW5)
PEG437A (UC)
PEG438A (ES)
CN701
CN200
JA290
JA750
IP-BUS
CN1
NM
SCD(USB)
:+0.63dBs
MCD
:+2.32dBs
BTAV
:-8.17dBs
IC260
NJM2885DL1-33
CD 3.3V
IC290
R5523N001B
T290
DLW21HN181SQ2L
IC750
HA12241FP
Q750
UMF23N
IC35
PST3435UL
D35
MA2J11100L
X1
20MHz
CZS2926-A
D290
D291
HZM6.8ZMWA
*D800
MA3J142E0L
BLUETOOTH
*B
*CN800
DF12(3.0)-40DP-0.5V(86)
D CN76
*CN810
*F
3
4


KN80
CN80
B CN901
D80
D81
D82
D83
HZM6.8ZMWA
C81
0.001
*C807
0.001

MODEL No.	TUNER			SYSTEM				B.REM		PRE_OUT							AUTO	WIRED_REMOTE				ASL		DISPOFF	HI-OUT				
	UNIT	RDS	R100	IC1	R5	R6	ROM	*A	R582	JA450	FRONT	REAR	R480	R481	R482	R483	ANT	JA150	*H	R4	R14	*G	C413	R86	VP12V	L701	R412	*I	*J
FH-P80BT/XJ/EW5	CWE2097	○	○	PEG436A	×	×	×	×	○	LPR6520-6S10F	○	○	○	×	○	×	×	YKS5001-E	○	○	○	○	×	○	○	○	×	○	1.8K
FH-P800BT/XJ/UC	CWE2098	×	×	PEG437A	×	○	×	○	×	LPR6520-6S10F	○	○	○	×	○	×	×	YKS5001-E	○	○	○	×	○	○	○	○	×	○	1.8K
FH-P8000BT/XJ/UC	CWE2098	×	×	PEG437A	○	×	×	×	○	LPR6520-6S10F	○	○	○	×	○	×	×	YKS5001-E	○	○	○	×	○	○	○	○	×	○	1.8K
FH-P6050UB/XJ/ES	CWE2098	×	×	PEG438A	○	×	×	×	○	JPJ-1273-010010	○	×	×	○	×	○	×	XKS7006-A	×	×	×	×	○	○	○	○	×	○	1.8K

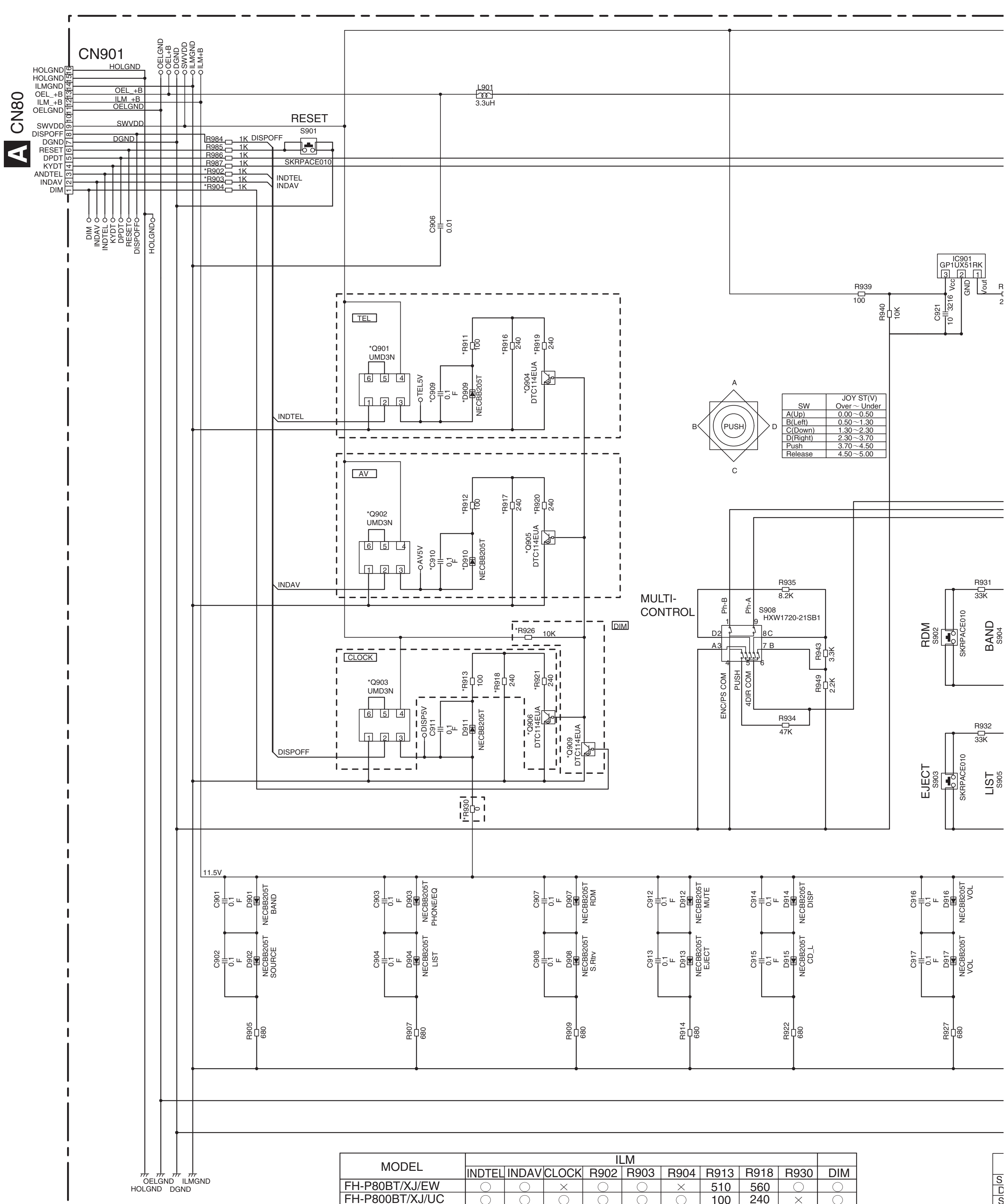
MODEL No.	Bluetooth																	Bluetooth2			FM NOISE(80M)			FCC	MIC NOISE	SURGE	LW NOISE
	5V→3V	3V→5V	MEMORY	5V/3V	*B	*C	*D	*E	*F	R1	R13	R21	R364	R28	R29	SP1	SP2	C800	C803	R80	C14	C108	C663	C807	C808	C650	C101
FH-P80BT/XJ/EW5	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	×	○	○	○	×	×	×	×	○	2200/16	220/16
FH-P800BT/XJ/UC	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	×	○	○	○	×	×	×	○	○	2200/16	100/16
FH-P8000BT/XJ/UC	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	×	○	○	○	×	×	×	○	○	2200/16	100/16
FH-P6050UB/XJ/ES	×	×	×	×	×	×	×	×	×	×	×	×	○	×	×	×	×	○	○	○	×	×	×	×	×	1000/16	100/16

A-a

A-b

A-a A-b

10.2 KEYBOARD UNIT

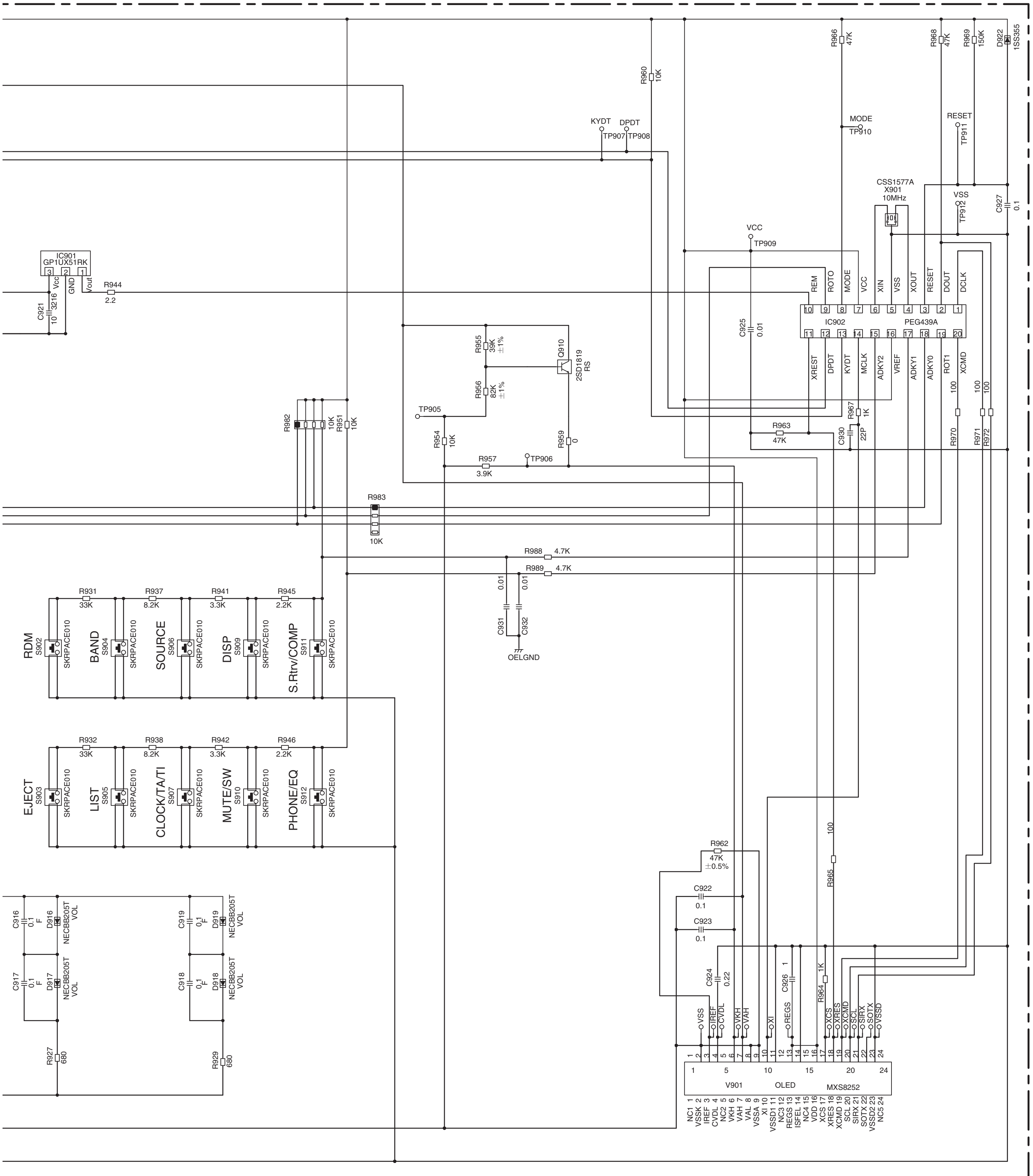

A
CN80
CN901
HOLGND
ILMGND
OEL_+B
ILM_+B
OELGND
SWVDD
DISPOFF
DGND
RESET
DPDT
KYDT
ANDTEL
INDAV
DIM
INDTEL
OEL+B
ILM+B
RESET
S901
SKRPACE010
R984 1K
R985 1K
R986 1K
R987 1K
*R902 1K
*R903 1K
*R904 1K
L901
3.3uH
C906
0.01
IC901
GP1UX51RK
Vcc
GND
Vout
R939
100
R940
10K
C921
10
3216
TEL
*Q901
UMD3N
TEL5V
*C909
0.1
F
*D909
NECBB205T
*R911
100
*R916
240
*R919
240
*Q904
DTC114EUA
AV
*Q902
UMD3N
AV5V
*C910
*D910
*R912
100
*R917
240
*R920
240
*Q905
DTC114EUA
CLOCK
*Q903
UMD3N
DISP5V
C911
D911
*R913
100
*R918
240
*R921
240
*Q906
DTC114EUA
*Q909
DTC114EUA
*R926
10K
DIM
*R930
0
PUSH
MULTI-
CONTROL
Ph-B
Ph-A
S908
HXW1720-21SB1
D2
A3
8C
7 B
ENC/PS COM
PUSH
4DIR COM
R935
8.2K
R943
3.3K
R949
2.2K
R934
47K
R931
33K
R932
33K
RDM
S902
SKRPACE010
BAND
S904
EJECT
S903
LIST
S905
11.5V
C901 0.1 F
D901 NECBB205T BAND
C902 0.1 F
D902 NECBB205T SOURCE
C903 0.1 F
D903 NECBB205T PHONE/EQ
C904 0.1 F
D904 NECBB205T LIST
C907 0.1 F
D907 NECBB205T RDM
C908 0.1 F
D908 NECBB205T S.Rtrv
C912 0.1 F
D912 NECBB205T MUTE
C913 0.1 F
D913 NECBB205T EJECT
C914 0.1 F
D914 NECBB205T DISP
C915 0.1 F
D915 NECBB205T CD_L
C916 0.1 F
D916 NECBB205T VOL
C917 0.1 F
D917 NECBB205T VOL
R905 680
R907 680
R909 680
R914 680
R922 680
R927 680
OELGND
ILMGND
HOLGND
DGND

SW	JOY ST(V) Over ~ Under
A(Up)	0.00~0.50
B(Left)	0.50~1.30
C(Down)	1.30~2.30
D(Right)	2.30~3.70
Push	3.70~4.50
Release	4.50~5.00

MODEL	ILM									
	INDTEL	INDAV	CLOCK	R902	R903	R904	R913	R918	R930	DIM
FH-P80BT/XJ/EW	○	○	×	○	○	×	510	560	○	○
FH-P800BT/XJ/UC	○	○	○	○	○	○	100	240	×	○
FH-P8000BT/XJ//UC	○	○	○	○	○	○	100	240	×	○
FH-P6050UB/XJ/ES	×	×	○	×	×	○	100	240	×	○

B

B KEYBOARD UNIT



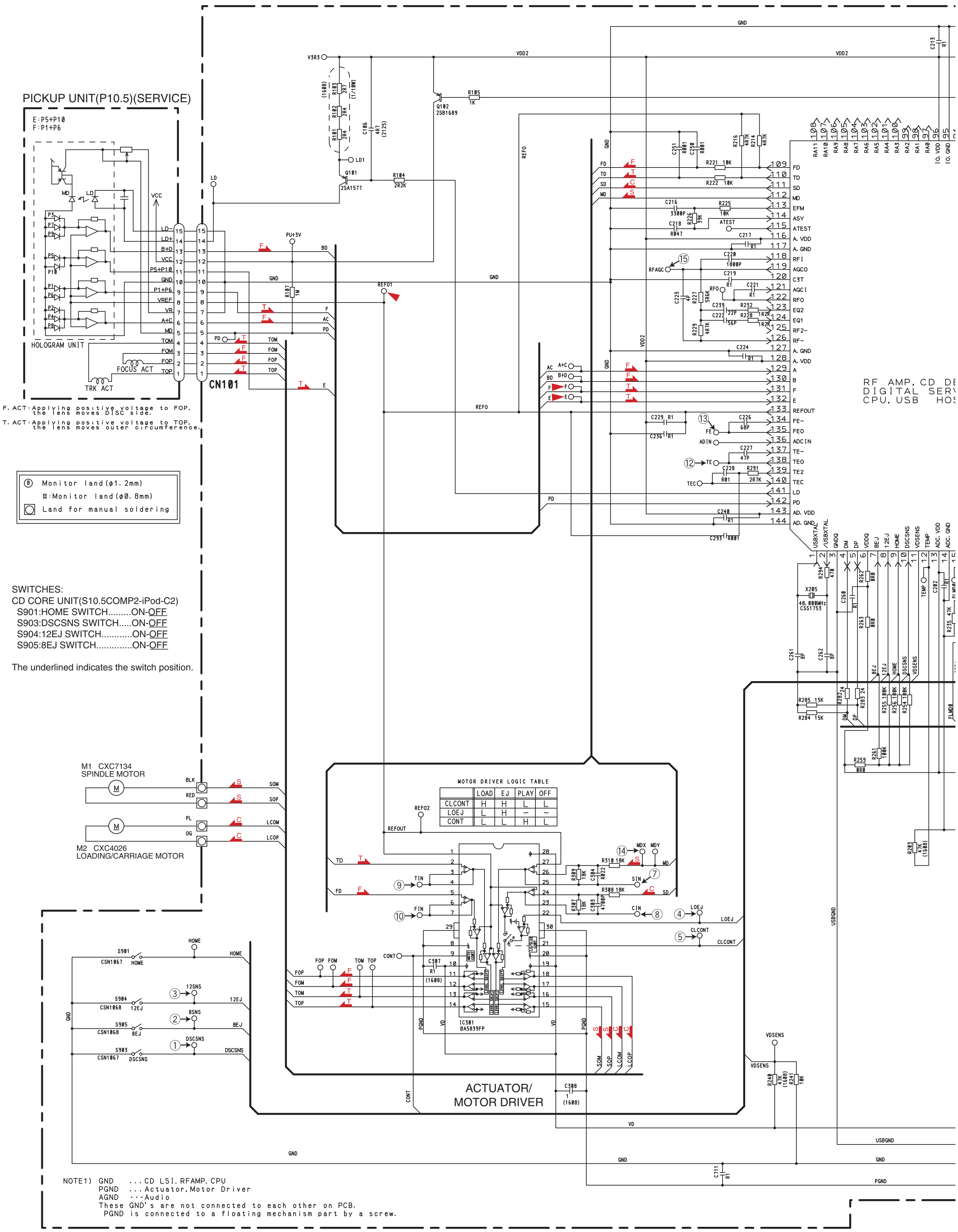
IC901
GP1UX51RK
Vcc
GND
Vout
R944
2.2
C921
10
3216
R960
10K
KYDT
DPDT
TP907
TP908
R966
47K
MODE
TP910
R968
47K
R969
150K
D922
1SS355
RESET
TP911
CSS1577A
X901
10MHz
VSS
TP912
C927
0.1
VCC
TP909
C925
0.01
IC902
PEG439A
REM
ROTO
MODE
VCC
XIN
VSS
XOUT
RESET
DOUT
DCLK
XREST
DPDT
KYDT
MCLK
ADKY2
VREF
ADKY1
ADKY0
ROT1
XCMD
R955
39K
±1%
R956
82K
±1%
Q910
2SD1819
RS
TP905
R954
10K
R959
0
R957
3.9K
TP906
R982
R951
10K
R963
47K
R967
1K
C930
22P
R970
100
R971
100
R972
100
R983
10K
R988
4.7K
R989
4.7K
C931
0.01
C932
0.01
OELGND
R931
33K
R937
8.2K
R941
3.3K
R945
2.2K
RDM
S902
BAND
S904
SOURCE
S906
DISP
S909
S.Rtrv/COMP
S911
SKRPACE010
R932
33K
R938
8.2K
R942
3.3K
R946
2.2K
EJECT
S903
LIST
S905
CLOCK/TA/TI
S907
MUTE/SW
S910
PHONE/EQ
S912
C916
0.1
F
D916
NECBB205T
VOL
C919
D919
C917
D917
C918
D918
R927
680
R929
680
R962
47K
±0.5%
C922
0.1
C923
0.1
R965
100
C924
0.22
C926
1
R964
1K
VSS
IREF
CVDL
VKH
VAH
XI
REGS
XCS
XRES
XCMD
SCL
SIRX
SOTX
VSSD
V901
OLED
MXS8252
NC1 1
VSSK 2
IREF 3
CVDL 4
NC2 5
VKH 6
VAH 7
VAL 8
VSSA 9
XI 10
VSSD1 11
NC3 12
REGS 13
ISFEL 14
NC4 15
VDD 16
XCS 17
XRES 18
XCMD 19
SCL 20
SIRX 21
SOTX 22
VSSD2 23
NC5 24

BUTTON NAME		SW(V) Over ~ Under
S.Rtrv/COMP	PHONE/EQ	0.00 ~ 0.50
DISP	MUTE/SW	0.50 ~ 1.30
SRC	CLOCK/TA/TI	1.30 ~ 2.30
BAND	LIST	2.30 ~ 3.70
RDM	EJECT	3.70 ~ 4.50
Release	Release	4.50 ~ 5.00

B

10.3 CD MECHANISM MODULE(GUIDE PAGE)

C-a



PICKUP UNIT(P10.5)(SERVICE)
E:P5+P10
F:P1+P6
HOLOGRAM UNIT
FOCUS ACT
TRK ACT
CN101
V3R3
VDD2
GND
Q101
2SA1577
Q102
2SB1689
R105 1K
R104 2R2K
LD1
PU+3V
REFO1
REFO
RFAGC
ATEST
ADIN
TEC
RF AMP, CD DE
DIGITAL SERV
CPU, USB HOS
X205
48.000MHz
CSS1753
MOTOR DRIVER LOGIC TABLE
REFO2
REFOUT
TD
FD
TIN
FIN
MDX
MDY
SIN
CIN
LOEJ
CLCONT
CONT
FOP
FOM
TOM
TOP
IC301
BA5839FP
ACTUATOR/
MOTOR DRIVER
VDSENS
USBGND
PGND
VD
M1 CXC7134
SPINDLE MOTOR
M2 CXC4026
LOADING/CARRIAGE MOTOR
BLK
RED
PL
OG
SOM
SOP
LCOM
LCOP
S901
CSN1067
HOME
S904
CSN1068
12EJ
S905
CSN1068
8EJ
S903
CSN1067
DSCSNS
12SNS
8SNS

F. ACT:Applying positive voltage to FOP, the lens moves DISC side.
T. ACT:Applying positive voltage to TOP, the lens moves outer circumference.

Ⓑ Monitor land(φ1.2mm)
#:Monitor land(φ0.8mm)
◯ Land for manual soldering

SWITCHES:
CD CORE UNIT(S10.5COMP2-iPod-C2)
S901:HOME SWITCH.........ON-OFF
S903:DSCSNS SWITCH.....ON-OFF
S904:12EJ SWITCH............ON-OFF
S905:8EJ SWITCH.............ON-OFF

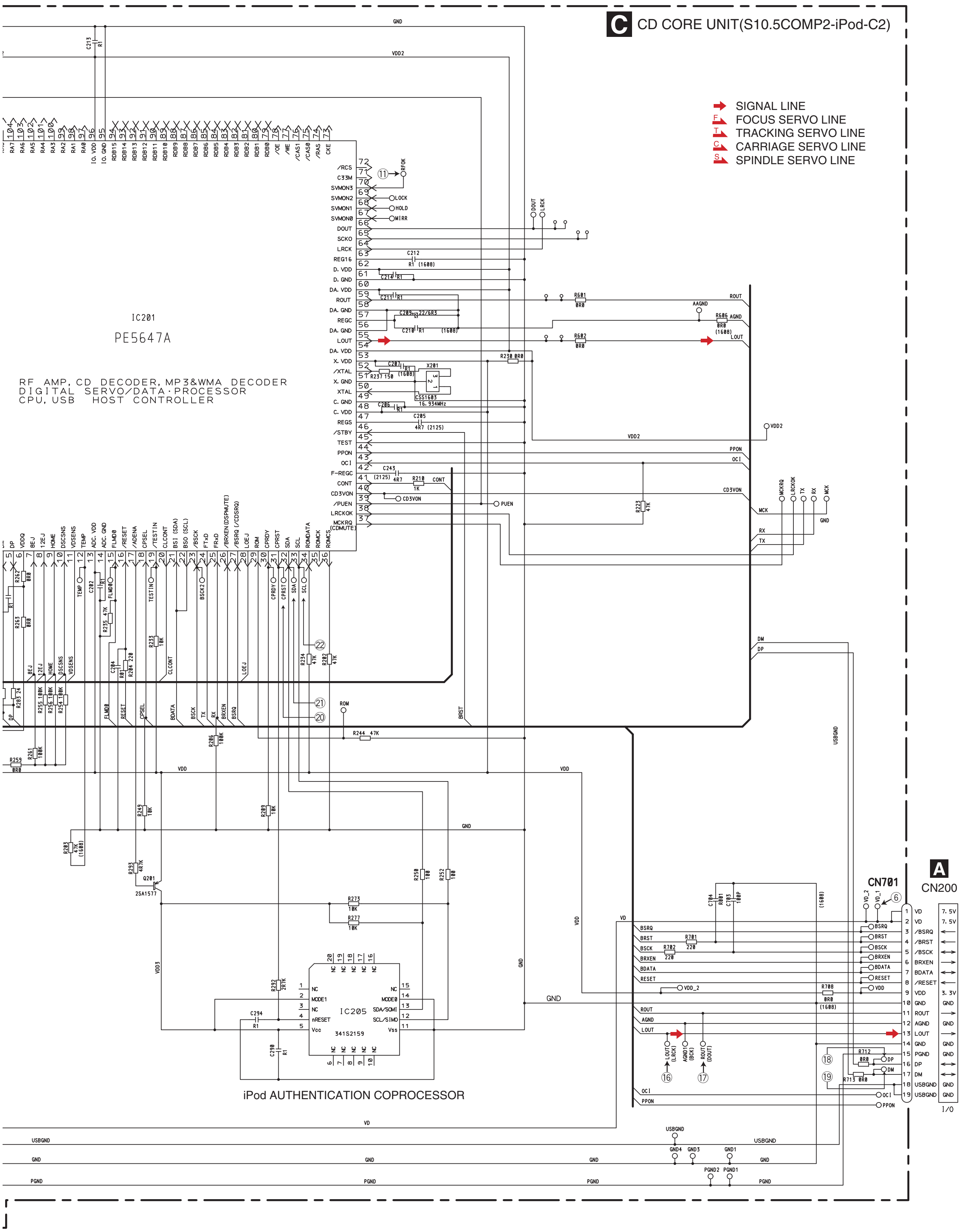
The underlined indicates the switch position.

MOTOR DRIVER LOGIC TABLE

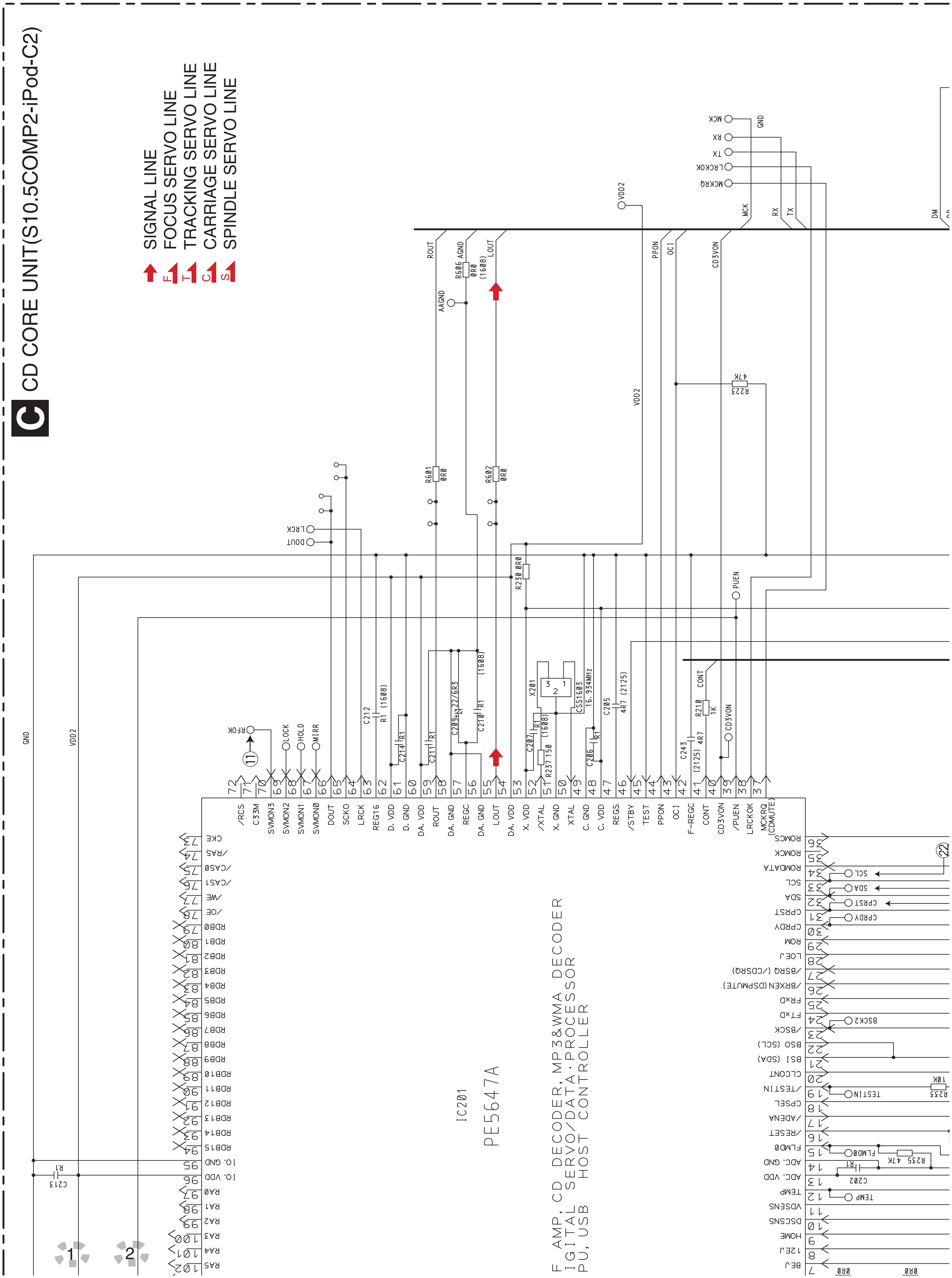
	LOAD	EJ	PLAY	OFF
CLCONT	H	H	L	L
LOEJ	L	H	–	–
CONT	L	L	H	L

NOTE1) GND ...CD LSI, RFAMP, CPU
PGND ...Actuator, Motor Driver
AGND ...Audio
These GND's are not connected to each other on PCB.
PGND is connected to a floating mechanism part by a screw.

C-b


C CD CORE UNIT(S10.5COMP2-iPod-C2)
SIGNAL LINE
F FOCUS SERVO LINE
T TRACKING SERVO LINE
C CARRIAGE SERVO LINE
S SPINDLE SERVO LINE
IC201
PE5647A
RF AMP, CD DECODER, MP3&WMA DECODER
DIGITAL SERVO/DATA·PROCESSOR
CPU, USB HOST CONTROLLER
X201
CSS1603
16.934MHz
Q201
2SA1577
IC205
341S2159
iPod AUTHENTICATION COPROCESSOR
A
CN701
CN200
VD 7.5V
VD 7.5V
/BSRQ
/BRST
/BSCK
BRXEN
BDATA
/RESET
VDD 3.3V
GND
ROUT
AGND
LOUT
GND
PGND
DP
DM
USBGND
USBGND
I/O
GND
VDD2
VDD
VD
USBGND
PGND

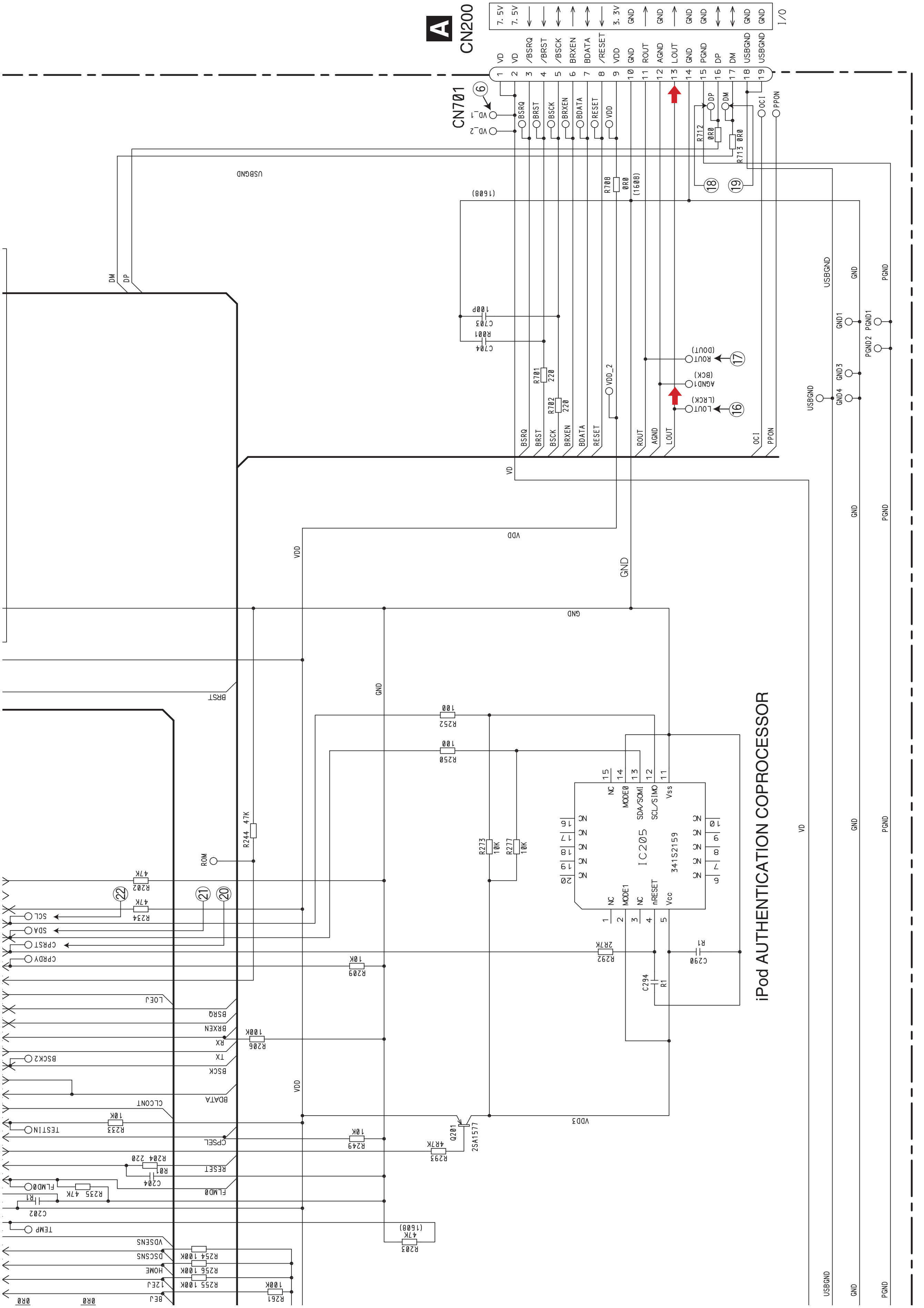
C CD CORE UNIT(S10.5COMP2-iPod-C2)



SIGNAL LINE
F FOCUS SERVO LINE
T TRACKING SERVO LINE
C CARRIAGE SERVO LINE
S SPINDLE SERVO LINE
IC201
PE5647A
F AMP, CD DECODER, MP3&WMA DECODER
IGITAL SERVO/DATA·PROCESSOR
PU, USB HOST CONTROLLER
/RCS
C33M
SVMON3
SVMON2
SVMON1
SVMON0
DOUT
SCKO
LRCK
REG16
D. VDD
D. GND
DA. VDD
ROUT
DA. GND
REGC
DA. GND
LOUT
DA. VDD
X. VDD
/XTAL
X. GND
XTAL
C. GND
C. VDD
REGS
/STBY
TEST
PPON
OC1
F-REGC
CONT
CD3VON
/PUEN
LRCKOK
MCKRQ (CDMUTE)
ROMCS
ROMCK
ROMDATA
SCL
SDA
CPRST
CPRDY
ROM
LOEJ
/BSRQ (/CDSRQ)
/BRXEN(DSPMUTE)
FRxD
FTxD
/BSCK
BSO (SCL)
BSI (SDA)
CLCONT
/TESTIN
CPSEL
/ADENA
/RESET
FLMD0
ADC. GND
ADC. VDD
TEMP
VDSENS
DSCSNS
HOME
12EJ
8EJ
CKE
/RAS
/CAS0
/CAS1
/WE
/OE
RDB0
RDB1
RDB2
RDB3
RDB4
RDB5
RDB6
RDB7
RDB8
RDB9
RDB10
RDB11
RDB12
RDB13
RDB14
RDB15
IO. GND
IO. VDD
RA0
RA1
RA2
RA3
RA4
RA5
GND
VDD2
C213
R1
RFOK
11
LOCK
HOLD
MIRR
LRCK
DOUT
R601
0R0
R602
0R0
R605 AGND 0R0 (1608)
AAGND
ROUT
LOUT
VDD2
PPON
OC1
CD3VON
MCK
RX
TX
LRCKOK
MCKRQ
GND
DM
R223
47K
R230 0R0
PUEN
C212
R1 (1608)
C214 R1
C211 R1
C209 22/6R3
C210 R1 (1608)
C207 R1
R237 150 (1608)
X201
CSS1603 16.934MHz
C206 R1
C205 4R7 (2125)
C243 (2125) 4R7
R210 1K
CONT
CD3VON
SCL
SDA
CPRST
CPRDY
22
BSCK2
TESTIN
R233 10K
FLMD0
R235 47K
C202 R1
TEMP
0R0
0R0

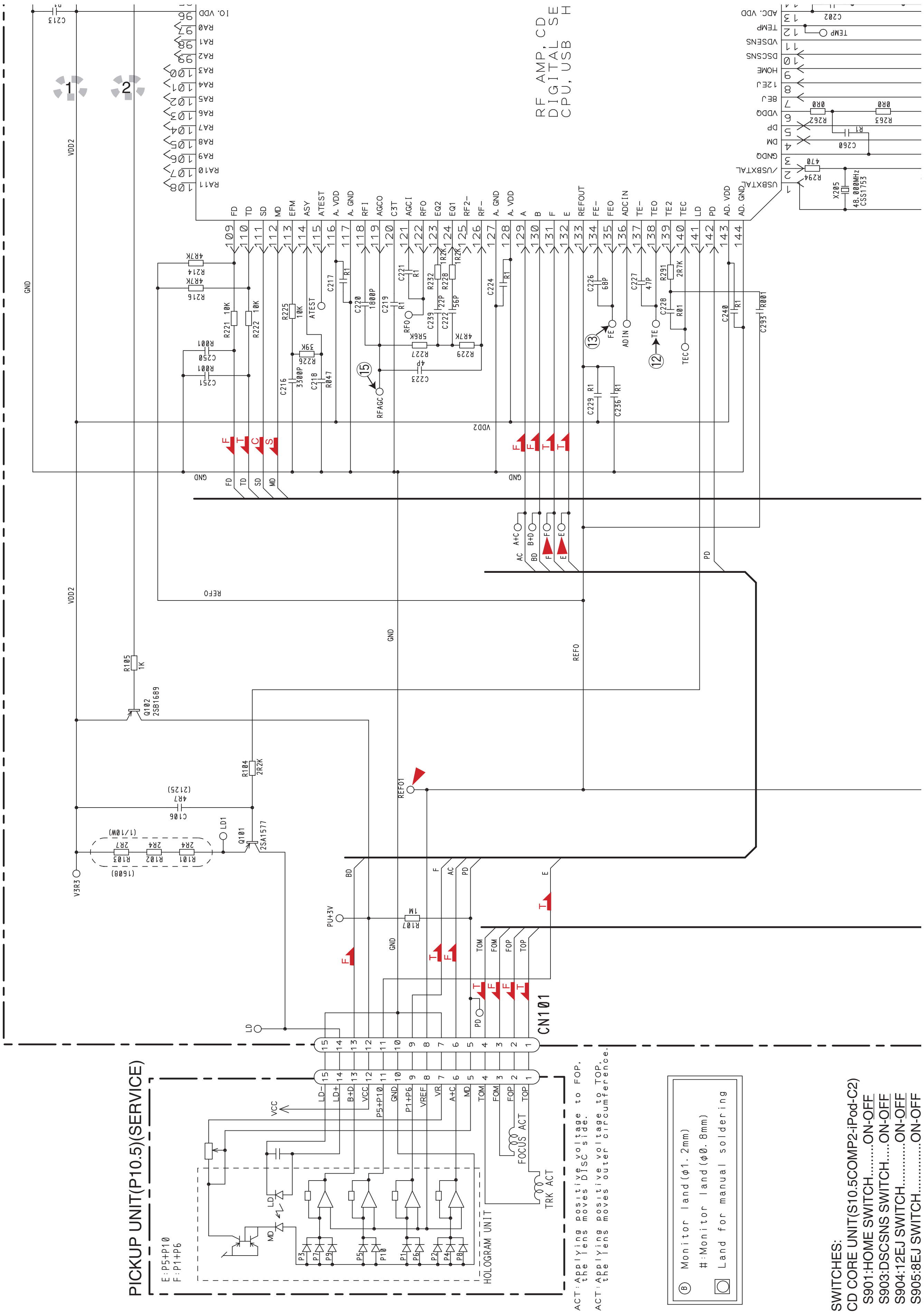
C-a C-b

C-b


A
CN200
CN701
VD
/BSRQ
/BRST
/BSCK
BRXEN
BDATA
/RESET
VDD
GND
ROUT
AGND
LOUT
PGND
DP
DM
USBGND
7.5V
3.3V
I/O
VD_1
VD_2
OCI
PPON
R712 0R0
R713 0R0
R708 0R0 (1608)
USBGND
(1608)
C703 100P
C704 R001
R701 220
R702 220
VDD_2
ROUT (DOUT)
AGND1 (BCK)
LOUT (LRCK)
GND1
GND3
GND4
PGND1
PGND2
⑥
⑯
⑰
⑱
⑲
⑳
㉑
㉒
VDD
GND
BRST
R252 100
R250 100
R244 47K
ROM
R273 10K
R277 10K
IC205
341S2159
NC
MODE0
SDA/SOMI
SCL/SIMO
Vss
MODE1
nRESET
Vcc
R292 2R7K
C290 R1
C294 R1
iPod AUTHENTICATION COPROCESSOR
R282 47K
R234 47K
SCL
SDA
CPRST
CPRDY
R209 10K
LOEJ
BSRQ
BRXEN
RX
TX
R206 100K
BSCK2
BSCK
BDATA
CLCONT
VDD3
TESTIN
R233 10K
CPSEL
R249 10K
Q201
2SA1577
R293 4R7K
RESET
R204 220
C204 R01
FLMD0
R255 47K
C202 R1
TEMP
R203 47K (1608)
VDSENS
DSCSNS
HOME
12EJ
8EJ
R254 100K
R256 100K
R255 100K
R261 100K
0R0
DM
DP
VD
USBGND
PGND

C-a C-b

C-b


RF AMP, CD
DIGITAL SE
CPU, USB H
IO. VDD
RA0
RA1
RA2
RA3
RA4
RA5
RA6
RA7
RA8
RA9
RA10
RA11
FD
TD
SD
MD
EFM
ASY
ATEST
A. VDD
A. GND
RFI
AGCO
C3T
AGCI
RFO
EQ2
EQ1
RF2-
RF-
A. GND
A. VDD
A
B
F
E
REFOUT
FE-
FEO
ADCIN
TE-
TEO
TE2
TEC
LD
PD
AD. VDD
AD. GND
USBXTAL
/USBXTAL
GNDQ
DM
DP
VDDQ
8EJ
12EJ
HOME
DSCSNS
VDSENS
TEMP
ADC. VDD
X205
48.000MHz
CSS1753
VDD2
GND
REFO
RFAGC
FE
TE
TEC
ADIN
Q102
2SB1689
R105
1K
R104
2R2K
Q101
2SA1577
LD1
V3R3
PU+3V
R107
1M
REFO1
CN101
LD
PD
PICKUP UNIT(P10.5)(SERVICE)
E:P5+P10
F:P1+P6
HOLOGRAM UNIT
FOCUS ACT
TRK ACT
LD-
LD+
B+D
VCC
P5+P10
GND
P1+P6
VREF
VR
A+C
MD
TOM
FOM
FOP
TOP

F. ACT: Applying positive voltage to FOP, the lens moves DISC side.

T. ACT: Applying positive voltage to TOP, the lens moves outer circumference.

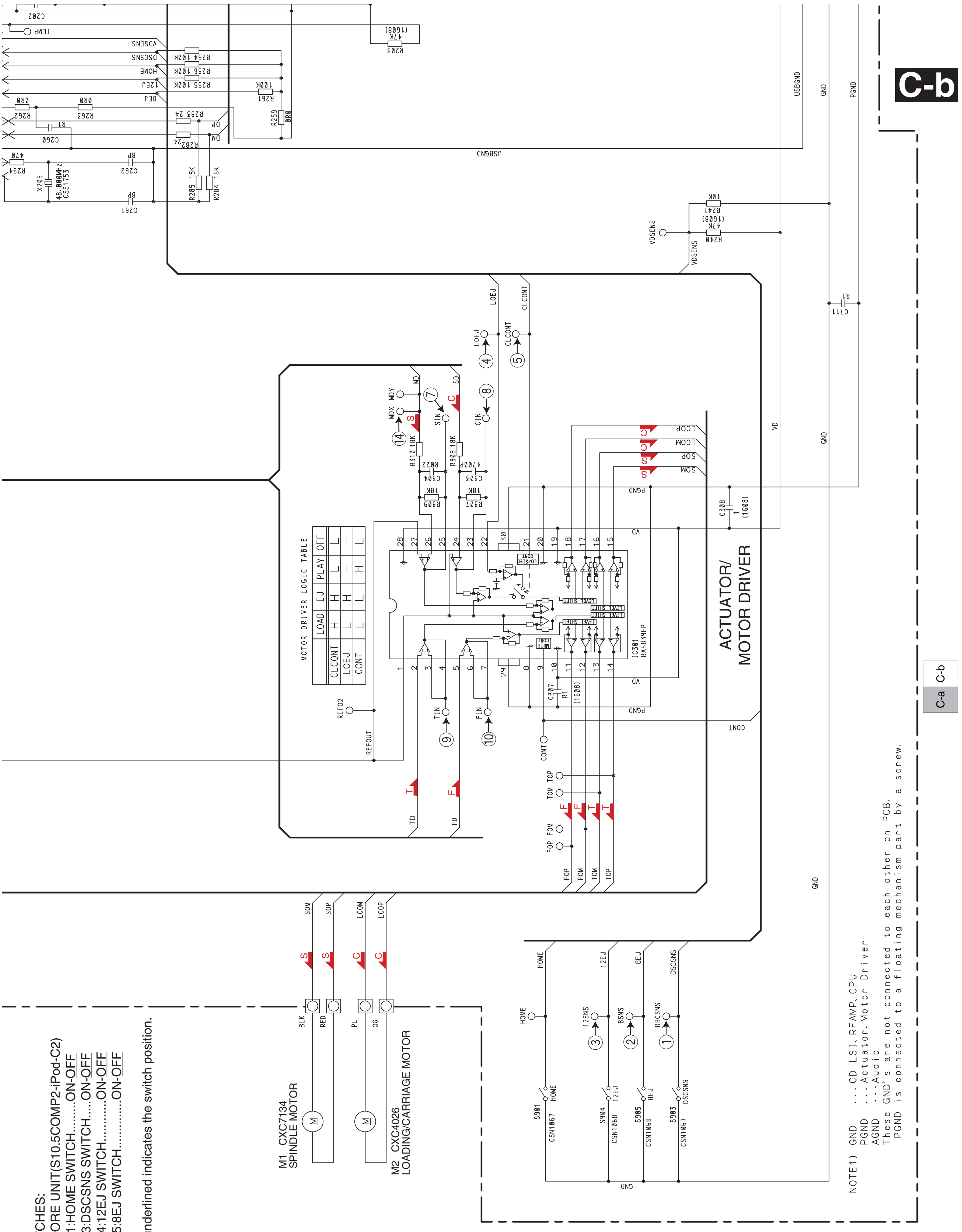
Ⓑ Monitor land (φ1.2mm)

#:Monitor land(φ0.8mm)

Land for manual soldering

SWITCHES:
CD CORE UNIT(S10.5COMP2-iPod-C2)
S901:HOME SWITCH........ON-OFF
S903:DSCSNS SWITCH.....ON-OFF
S904:12EJ SWITCH..........ON-OFF
S905:8EJ SWITCH............ON-OFF

C-a


A
B
C
D
E
F
C-b
C-a
ACTUATOR/
MOTOR DRIVER
IC301
BA5839FP
USBGND
GND
PGND
VD
VDSENS
C711 R1
R241 10K
R240 47K (1608)
R203 47K (1608)
C202
TEMP
DSCSNS
HOME
12EJ
8EJ
R254 100K
R256 100K
R255 100K
R261 100K
R259 0R0
R262 0R0
R263 0R0
R283 24
R282 24
DP
DM
C260
R1
R294 470
X205 48.000MHz CSS1753
C262 8P
C261 8P
R285 15K
R284 15K
LOEJ
CLCONT
MDX
MDY
MD
SD
SIN
CIN
TIN
FIN
TD
FD
REFO2
REFOUT
CONT
R310 18K
R308 18K
C304 R022
C303 4700P
R309 18K
R307 18K
C308 1 (1608)
C307 R1 (1608)
LCOP
LCOM
SOP
SOM
LO/SLED CONT
MUTE CONT
LEVEL SHIFT
TOM TOP
FOP FOM
S
C
T
F
BLK
RED
PL
OG
M1 CXC7134
SPINDLE MOTOR
M2 CXC4026
LOADING/CARRIAGE MOTOR
S901 CSN1067 HOME
S904 CSN1068 12EJ
S905 CSN1068 8EJ
S903 CSN1067 DSCSNS
12SNS
8SNS
① ② ③ ④ ⑤ ⑦ ⑧ ⑨ ⑩ ⑭

MOTOR DRIVER LOGIC TABLE

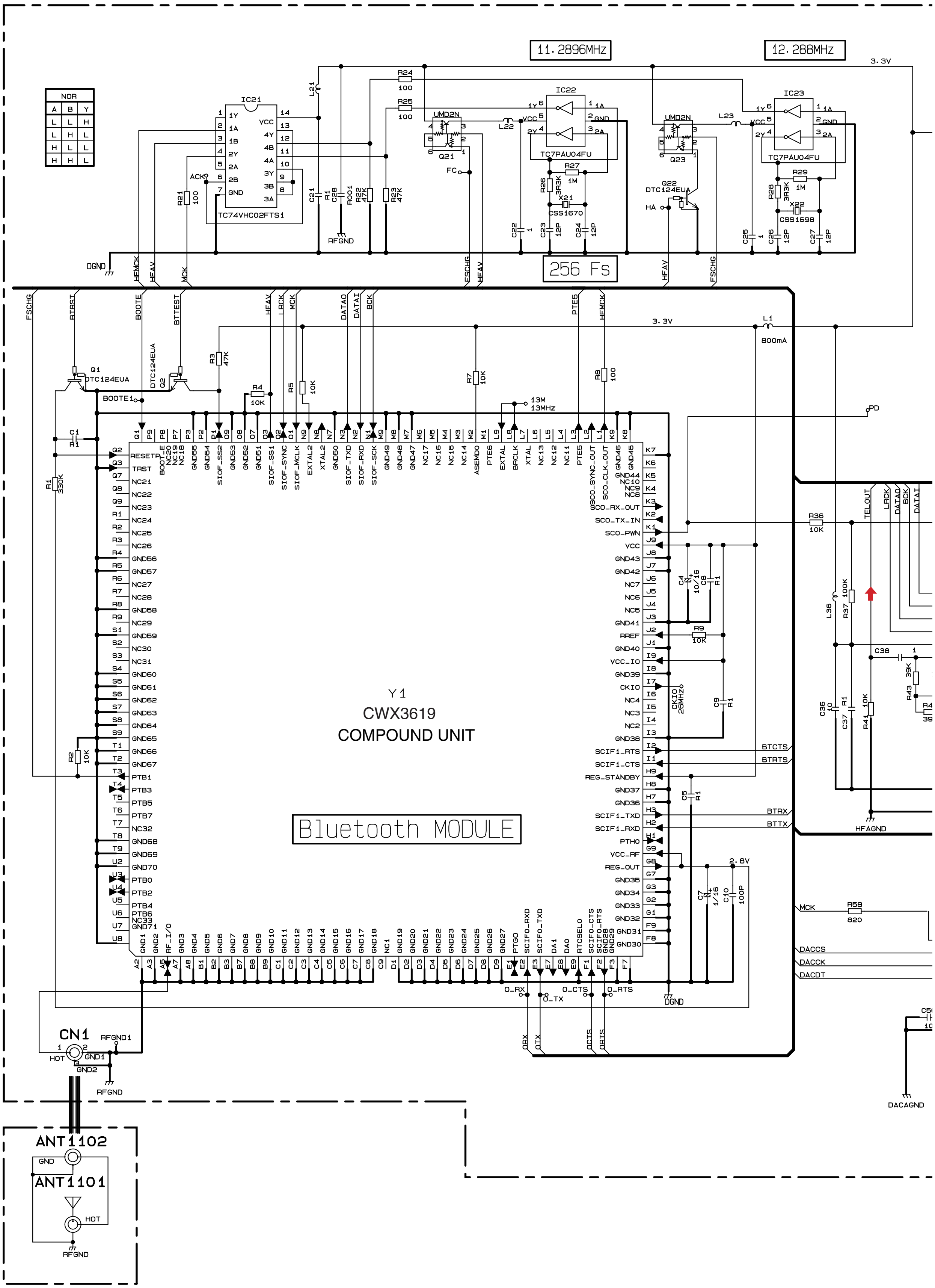
	LOAD	EJ	PLAY	OFF
CLCONT	H	H	L	L
LOEJ	L	H	-	-
CONT	L	L	H	L

SWITCHES:
CD CORE UNIT(S10.5COMP2-iPod-C2)
S901:HOME SWITCH.........ON-OFF
S903:DSCSNS SWITCH......ON-OFF
S904:12EJ SWITCH...........ON-OFF
S905:8EJ SWITCH.............ON-OFF

The underlined indicates the switch position.

NOTE 1) GND ....CD LSI, RFAMP, CPU
PGND ....Actuator, Motor Driver
AGND ....Audio
These GND's are not connected to each other on PCB.
PGND is connected to a floating mechanism part by a screw.

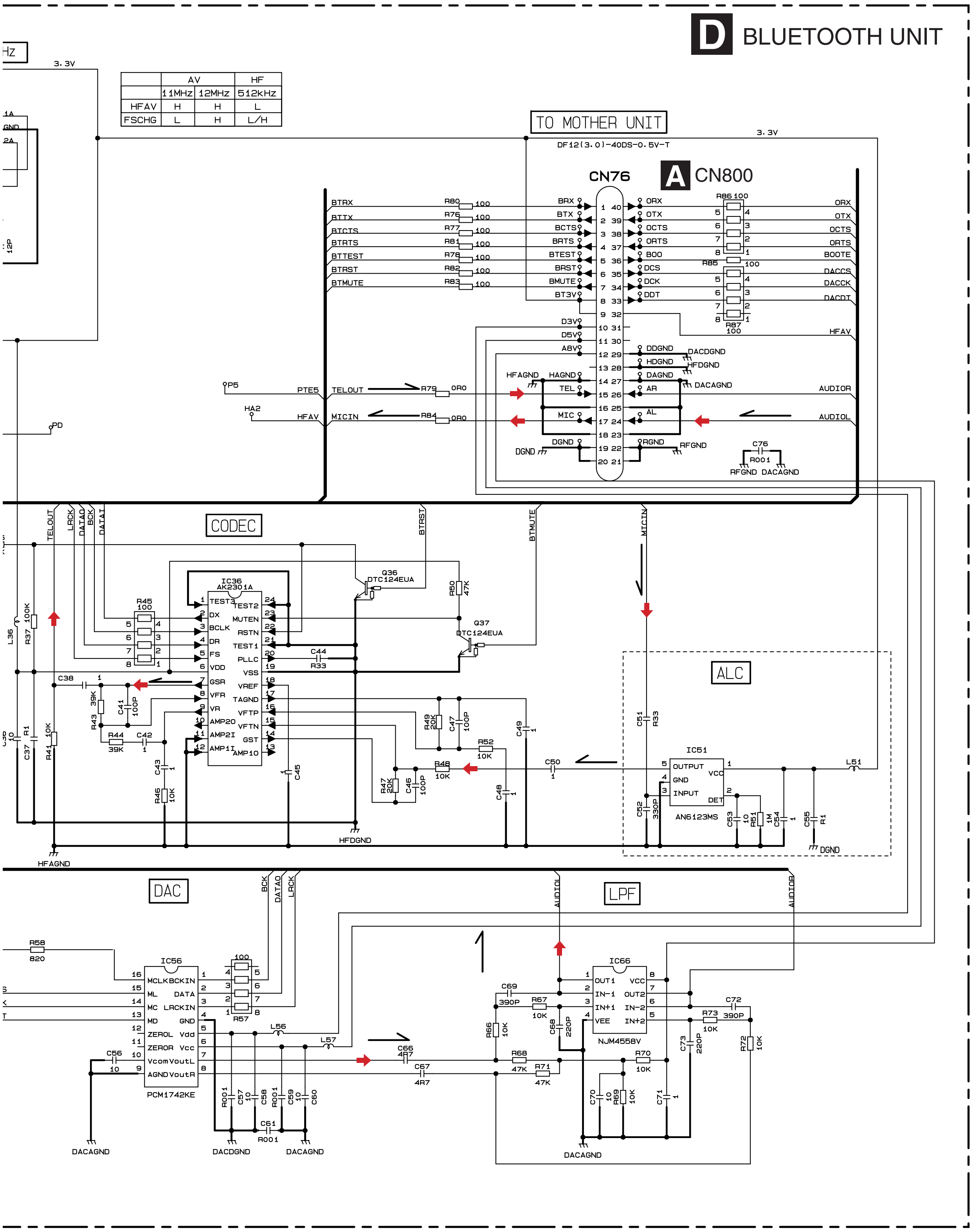
10.4 BLUETOOTH UNIT



11.2896MHz
12.288MHz
3.3V
NOR
A B Y
L L H
L H L
H L L
H H L
IC21
TC74VHC02FTS1
IC22
TC7PAU04FU
IC23
TC7PAU04FU
UMD2N
Q21
Q23
Q22
DTC124EUA
X21
CSS1670
X22
CSS1698
R21 100
R22 47K
R23 47K
R24 100
R25 100
R26 3R3K
R27 1M
R28 3R3K
R29 1M
L21
L22
L23
C21 1
C22 1
C23 12P
C24 12P
C25 1
C26 12P
C27 12P
C28 1
R001
RFGND
ACK
FC
HA
DGND
256 Fs
HFMCK
HFAV
MCK
FSCHG
BTRST
BOOTE
BTTEST
LRCK
DATAO
DATAI
BCK
PTE5
Q1
DTC124EUA
Q2
DTC124EUA
BOOTE1
R1 330K
R2 10K
R3 47K
R4 10K
R5 10K
R7 10K
R8 100
R9 10K
C1 R1
C4 10/16
C5 R1
C7 1/16
C8 R1
C9 R1
C10 100P
L1 800mA
13M
13MHz
CKIO 26MHz
2.8V
Y1
CWX3619
COMPOUND UNIT
Bluetooth MODULE
RESETP
TRST
SCO_RX_OUT
SCO_TX_IN
SCO_PWN
VCC
RREF
VCC_IO
CKIO
SCIF1_RTS
SCIF1_CTS
REG_STANDBY
SCIF1_TXD
SCIF1_RXD
PTH0
VCC_RF
REG_OUT
BTCTS
BTRTS
BTRX
BTTX
O_RX
O_TX
O_CTS
O_RTS
ORX
OTX
OCTS
ORTS
PD
R36 10K
R37 100K
L36
C36 10
C37 R1
C38 1
R41 10K
R43 39K
TELOUT
LRCK
DATAO
BCK
DATAI
HFAGND
MCK
R58 820
DACCS
DACCK
DACDT
DACAGND
CN1
RFGND1
HOT
GND1
GND2
RFGND
ANT1102
ANT1101
GND
HOT
RFGND

E ANTENNA UNIT

D BLUETOOTH UNIT


TO MOTHER UNIT
DF12(3.0)-40DS-0.5V-T
CN76
A CN800
3.3V
BTRX
BTTX
BTCTS
BTRTS
BTTEST
BTRST
BTMUTE
R80 100
R76 100
R77 100
R81 100
R78 100
R82 100
R83 100
BRX
BTX
BCTS
BRTS
BTEST
BRST
BMUTE
BT3V
D3V
D5V
A8V
HFAGND
HAGND
TEL
MIC
DGND
ORX
OTX
OCTS
ORTS
BOO
DCS
DCK
DDT
DDGND
HDGND
DAGND
AR
AL
RGND
RFGND
DACDGND
HFDGND
DACAGND
R86 100
R85 100
R87 100
BOOTE
DACCS
DACCK
DACDT
HFAV
AUDIOR
AUDIOL
C76
R001
P5
PTE5
TELOUT
R79 0R0
HA2
HFAV
MICIN
R84 0R0
PD
CODEC
IC36
AK2301A
TEST3
DX
BCLK
DR
FS
VDD
GSR
VFR
VR
AMP2O
AMP2I
AMP1I
TEST2
MUTEN
RSTN
TEST1
PLLC
VSS
VREF
TAGND
VFTP
VFTN
GST
AMP1O
R45 100
Q36
DTC124EUA
Q37
DTC124EUA
R50 47K
C44
R33
C38 1
R43 39K
C41 100P
R44 39K
C42 1
C43 1
R46 10K
C45
R37 100K
L36
R41 10K
C37 R1
R49 20K
C47 100P
R52 10K
C49 1
R47 20K
C46 100P
R48 10K
C48 1
C50 1
HFDGND
HFAGND
TELOUT
LRCK
DATAO
BCK
DATAI
BTRST
BTMUTE
MICIN
ALC
C51 R33
IC51
OUTPUT
VCC
GND
INPUT
DET
AN6123MS
C52 330P
C53 10
R51 1M
C54 1
C55 R1
L51
DGND
DAC
BCK
DATAO
LRCK
R58 820
IC56
MCLK
BCKIN
ML
DATA
MC
LRCKIN
MD
GND
ZEROL
Vdd
ZEROR
Vcc
VcomVoutL
AGND
VoutR
PCM1742KE
R57 100
C56 10
L56
L57
R001
C57 10
C58
R001
C59 10
C60
C61 R001
DACAGND
DACDGND
DACAGND
LPF
AUDIOL
AUDIOR
IC66
OUT1
IN-1
IN+1
VEE
VCC
OUT2
IN-2
IN+2
NJM4558V
C69 390P
R67 10K
R66 10K
C68 220P
C66 4R7
C67 4R7
R68 47K
R71 47K
R70 10K
C70 10
R69 10K
C71 1
C73 220P
R73 10K
C72 390P
R72 10K
DACAGND

	AV		HF
	11MHz	12MHz	512kHz
HFAV	H	H	L
FSCHG	L	H	L/H

10.5 WAVEFORMS

● CD CORE UNIT

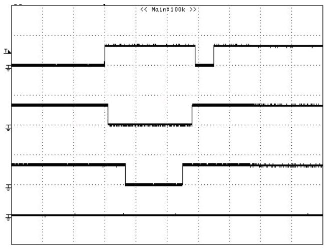
Note : 1. The encircled numbers denote measuring points in the circuit diagram.
2. Reference voltage REFO1(1.65 V)

①DSCSNS 5 V/div 500 ms/div
②8SNS 5 V/div
③12SNS 5 V/div
④LOEJ 5 V/div

12 cm CD Loading operation

Ref.: GND

Mode: Normal

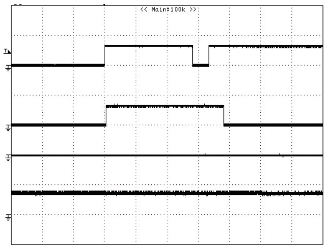


①DSCSNS 5 V/div 500 ms/div
⑤CLCONT 5 V/div
④LOEJ 5 V/div
⑥VD 10 V/div

12 cm CD Loading operation

Ref.: GND

Mode: Normal

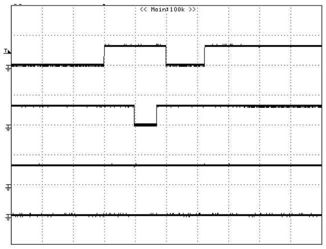


①DSCSNS 5 V/div 500 ms/div
②8SNS 5 V/div
③12SNS 5 V/div
④LOEJ 5 V/div

8 cm CD Loading operation

Ref.: GND

Mode: Normal

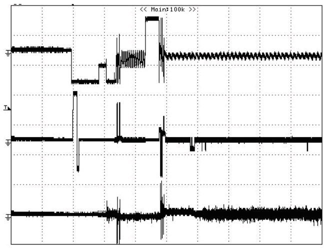


⑦SIN 1 V/div 1 s/div
⑧CIN 500 mV/div
⑨TIN 1 V/div

12 cm CD-DA setup operation after loading

Ref.: REFO

Mode: Normal

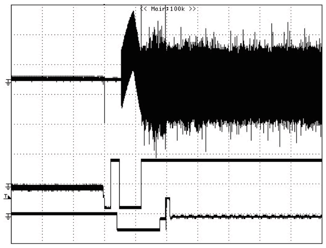


⑩FIN 200 mV/div 500 ms/div
⑪RFOK(MONI_3) 2 V/div
⑦SIN 2 V/div

12 cm CD-DA Source On setup operation

Ref.: REFO

Mode: Normal

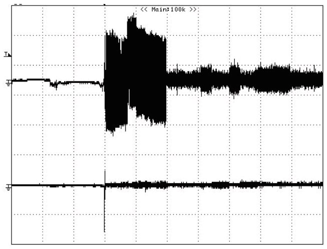


⑫TE 500 mV/div 200 ms/div
⑬FE 500 mV/div

Source On setup operation

Ref.: REFO

Mode: Normal

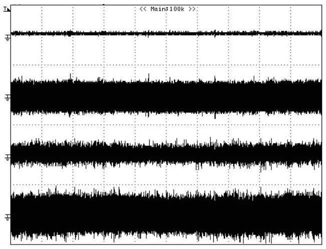


⑬FE 500 mV/div 20 ms/div
⑩FIN 500 mV/div
⑫TE 500 mV/div
⑨TIN 500 mV/div

CD-DA Play operation

Ref.: REFO

Mode: Normal

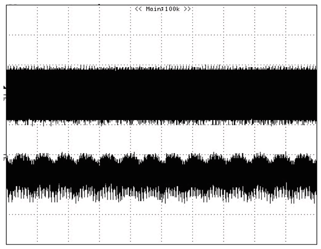


⑭MDX 2 V/div 200 ms/div
⑦SIN 500 mV/div

Spindle waveform during play operation

Ref.: REFO

Mode: Normal

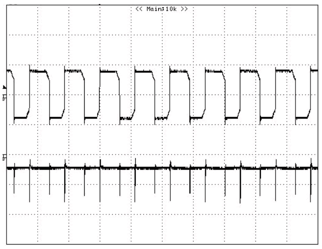


⑭MDX 2 V/div 5 μs/div
⑦SIN 500 mV/div

Spindle waveform during play operation (Wider)

Ref.: REFO

Mode: Normal

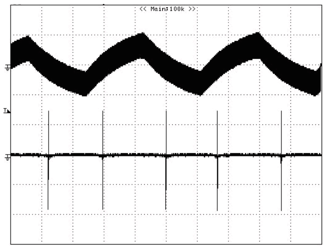


⑩FIN 500 mV/div 200 ms/div
⑬FE 500 mV/div

Focus Search waveform

Ref.: REFO

Mode: TEST

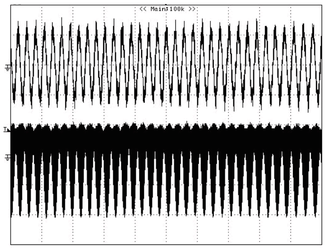


⑫TE 500 mV/div 2 ms/div
⑮RFAGC 500 mV/div

Track Open waveform

Ref.: REFO

Mode: TEST

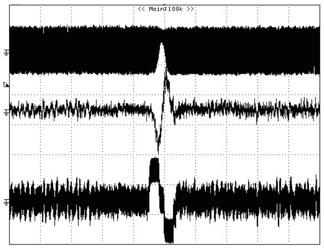


⑮RFAGC 1 V/div 500 μs/div
⑫TE 500 mV/div
⑨TIN 500 mV/div

1 Track Jump waveform

Ref.: REFO

Mode: TEST

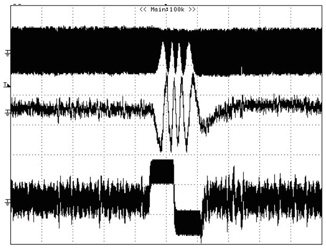


⑮RFAGC 1 V/div 500 μs/div
⑫TE 500 mV/div
⑨TIN 500 mV/div

4 Tracks Jump waveform

Ref.:
REFO

Mode:
TEST

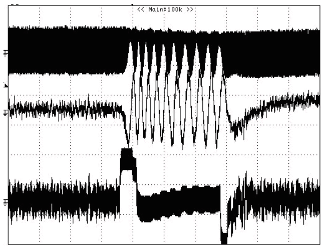


⑮RFAGC 1 V/div 500 μs/div
⑫TE 500 mV/div
⑨TIN 500 mV/div

10 Tracks Jump waveform

Ref.:
REFO

Mode:
TEST

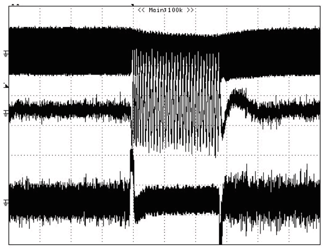


⑮RFAGC 1 V/div 2 ms/div
⑫TE 500 mV/div
⑨TIN 500 mV/div

32 Tracks Jump waveform

Ref.:
REFO

Mode:
TEST

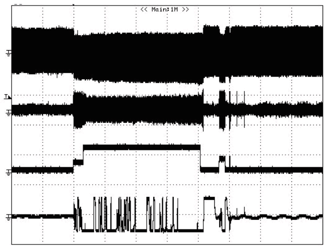


⑮RFAGC 1 V/div 200 ms/div
⑫TE 1 V/div
⑧CIN 1 V/div
⑦SIN 2 V/div

Search operation(Outter to Inner)

Ref.:
REFO

Mode:
Normal

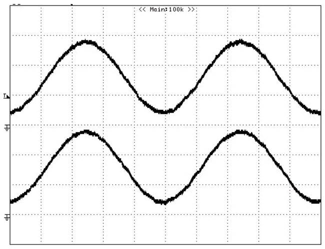


⑯LOUT 1 V/div 200 μs/div
⑰ROUT 1 V/div

Analog audio waveform

Ref.:
AGND

Mode:
Normal

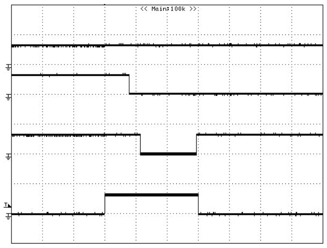


①DSCSNS 5 V/div 500 ms/div
②8SNS 5 V/div
③12SNS 5 V/div
④LOEJ 5 V/div

12 cm CD Eject operation

Ref.:
GND

Mode:
Normal

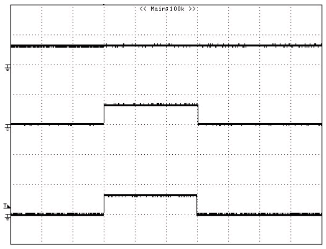


①DSCSNS 5 V/div 500 ms/div
⑤CLCONT 5 V/div
④LOEJ 5 V/div

12 cm CD Eject operation

Ref.:
GND

Mode:
Normal

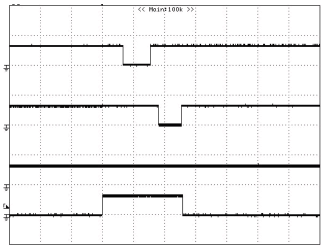


①DSCSNS 5 V/div 500 ms/div
②8SNS 5 V/div
③12SNS 5 V/div
④LOEJ 5 V/div

8 cm CD Eject operation

Ref.:
GND

Mode:
Normal

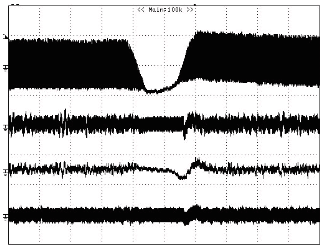


⑮RFAGC 1 V/div 500 μs/div
⑨TIN 1 V/div
⑫TE 1 V/div
⑩FIN 1 V/div

Black dot(800 μm) during play

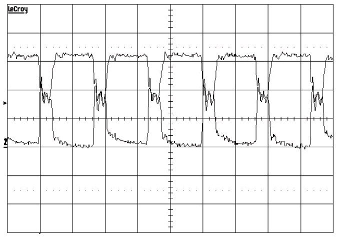
Ref.:
REFO

Mode:
Normal



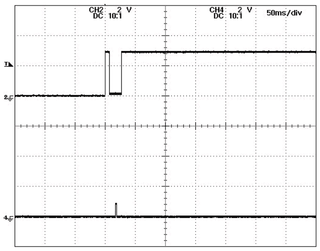
⑱DP 1 V/div 50 ns/div
⑲DM 1 V/div

USB Play



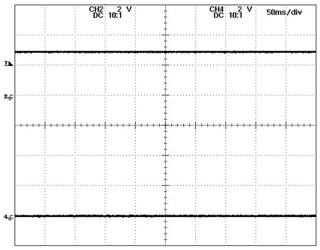
⑱DP 2 V/div 50 ms/div
⑲DM 2 V/div

USB device inserting to USB connector.



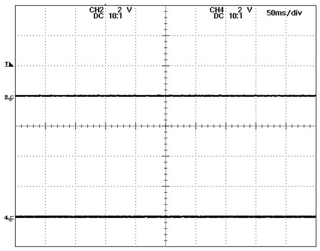
⑱DP 2 V/div 50 ms/div
⑲DM 2 V/div

CD Play with USB(iPod) device connecting.



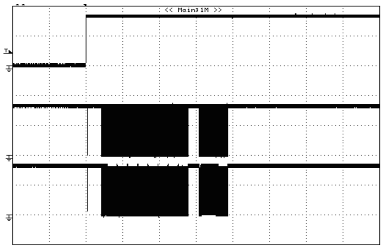
⑱DP 2 V/div 50 ms/div
⑲DM 2 V/div

ACC OFF with USB(iPod) device connecting.



⑳CPRST 2 V/div 500 ms/div
㉑SDA 2 V/div
㉒SCL 2 V/div

iPod Authentication Operation

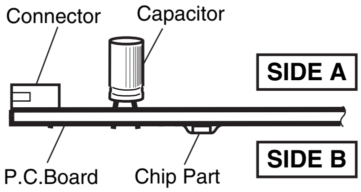


11. PCB CONNECTION DIAGRAM

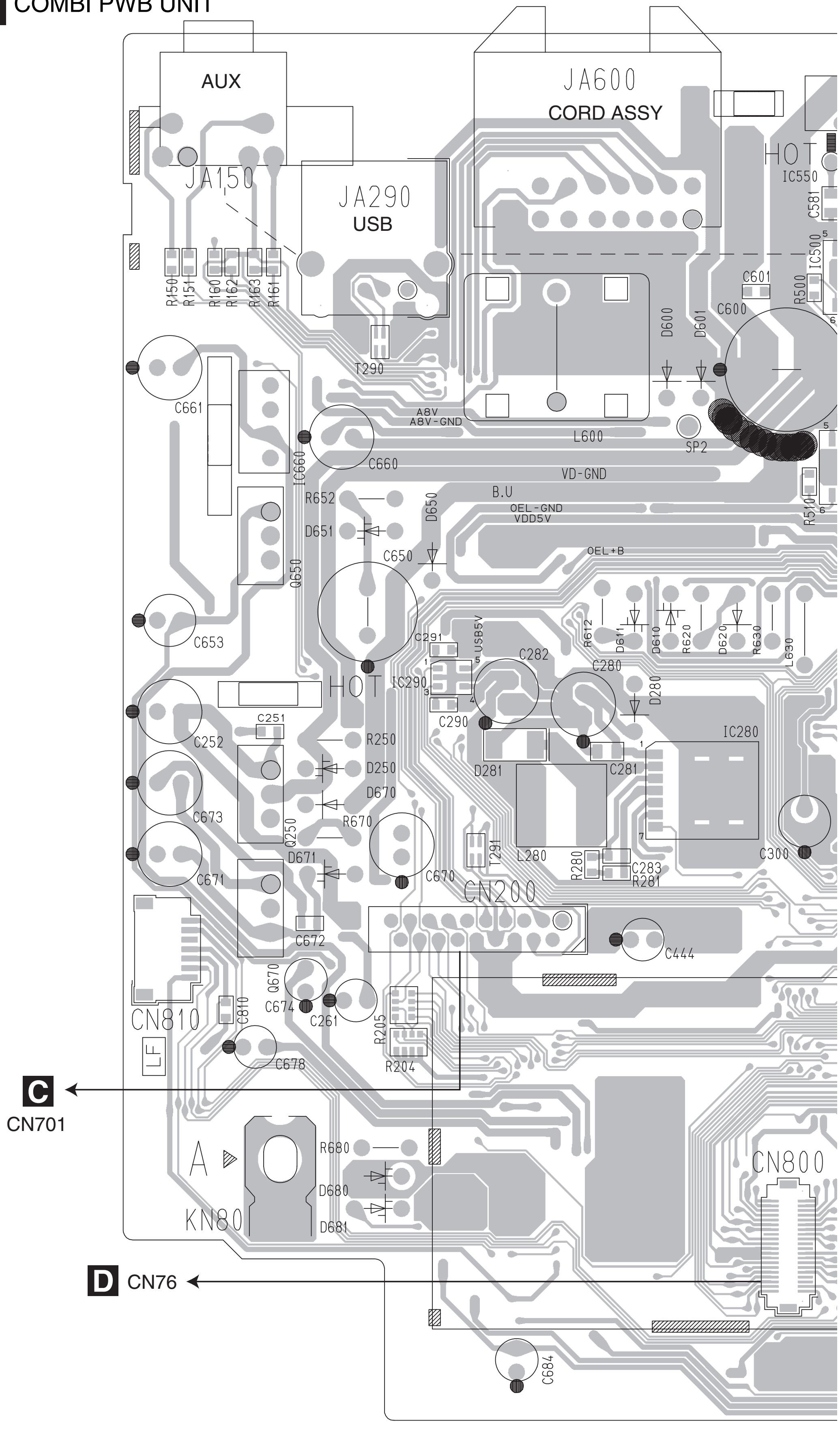
11.1 COMBI PWB UNIT

NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination. For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams


Connector
Capacitor
SIDE A
P.C.Board
Chip Part
SIDE B

A COMBI PWB UNIT


AUX
JA150
JA290
USB
JA600
CORD ASSY
HOT
IC550
C581
IC500
R500
C601
C600
D600
D601
R150
R151
R160
R162
R163
R161
T290
C661
IC660
C660
A8V
A8V-GND
L600
SP2
VD-GND
B.U
OEL-GND
VDD5V
OEL+B
R652
D651
D650
C650
Q650
R510
C653
C291
USB5V
IC290
C282
C280
R612
D611
D610
R620
D620
R630
L630
HOT
C290
D280
IC280
C251
C252
R250
D250
D670
R670
D281
C281
C673
Q250
D671
T291
L280
R280
C283
R281
C300
C671
C670
CN200
C444
C672
Q670
C674
C261
CN810
C810
R205
R204
LF
C678
C
CN701
A
KN80
R680
D680
D681
CN800
D
CN76
C684
FRONT

A

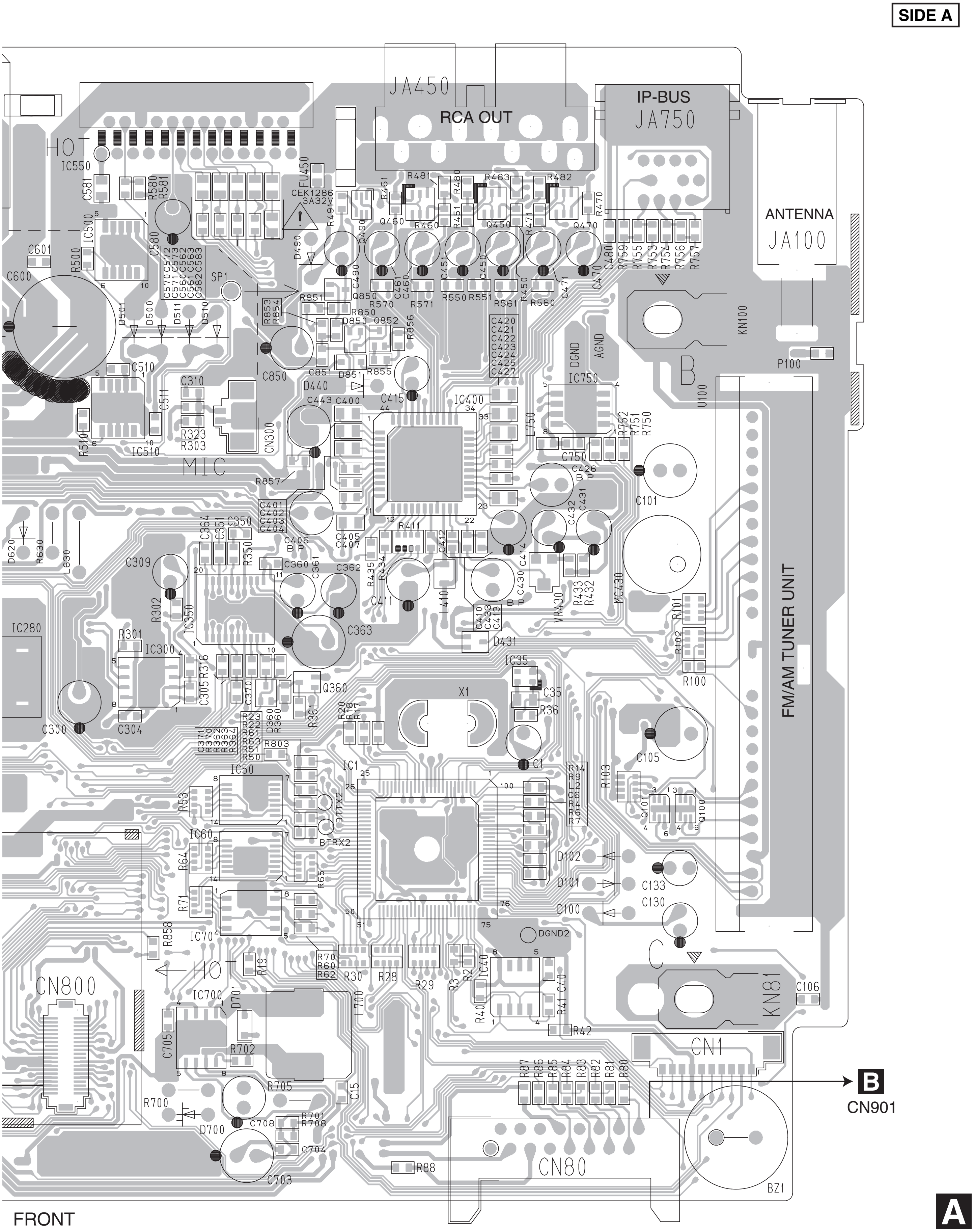
B

C

D

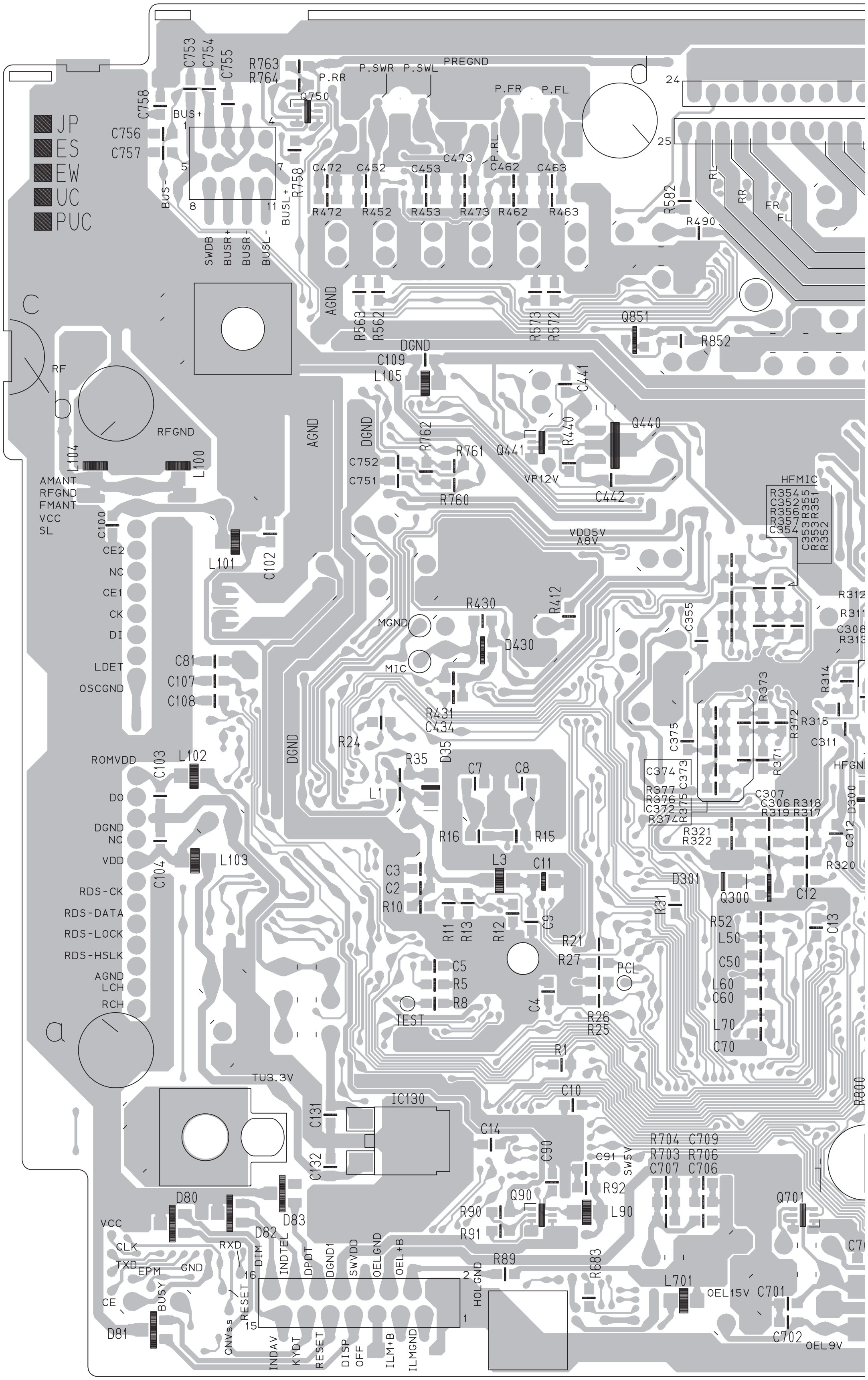
E

F

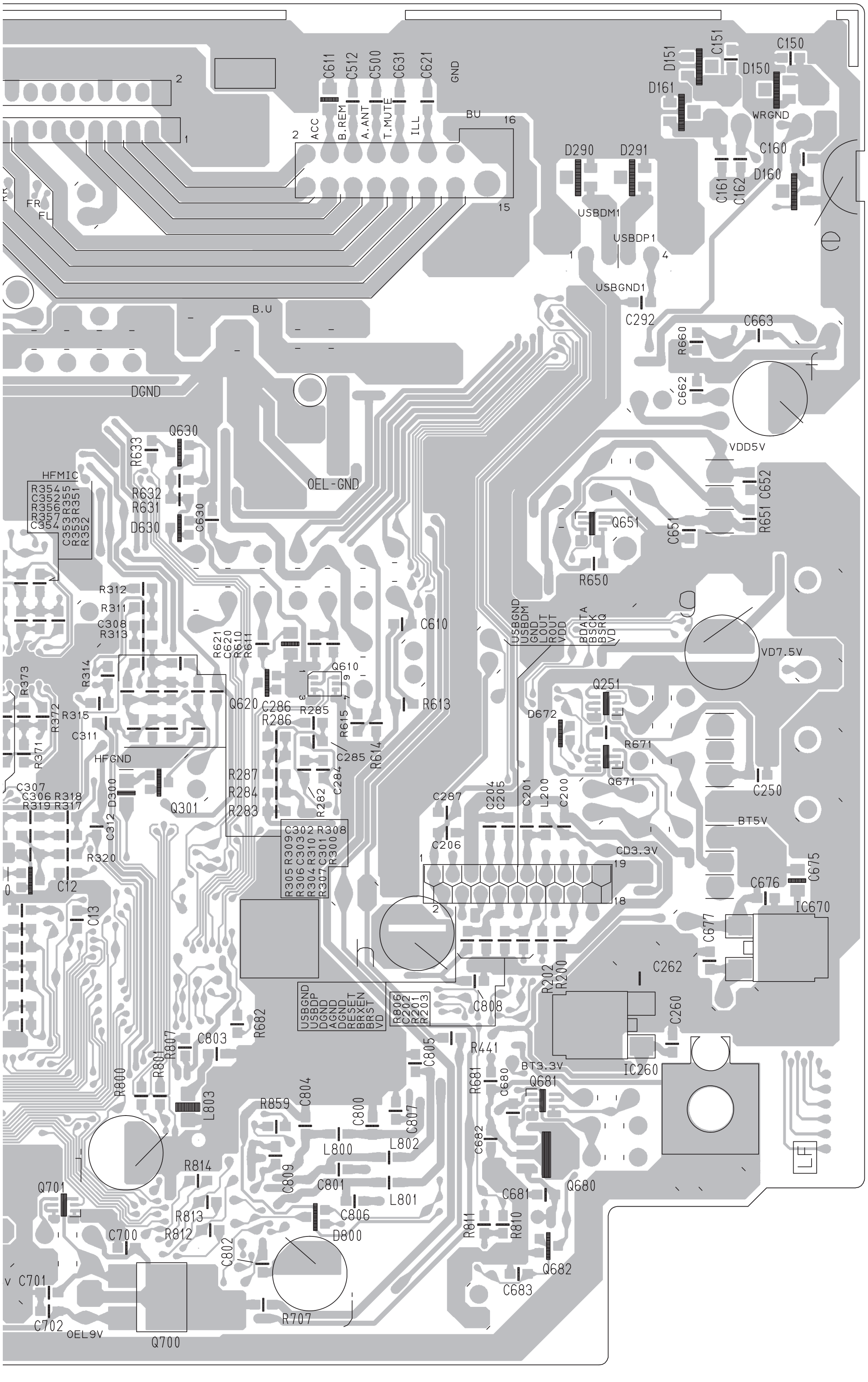

SIDE A
JA450
RCA OUT
IP-BUS
JA750
ANTENNA
JA100
HOT
IC550
C581
R580
R581
IC500
C580
C601
R500
C600
FU450
CEK1286 3A32
R491
D490
Q490
C490
R461
R481
Q460
R460
R480
R451
C461
C460
R483
Q450
R471
R482
Q470
R470
C451
C450
R450
C471
C470
C480
R759
R755
R753
R754
R756
R757
C570 C572
C571 C573
C560 C562
C561 C563
C582 C583
SP1
R851
Q850
R850
R853
R854
D850
Q852
R856
R570
R571
R550
R551
R561
R560
D501
D500
D511
D510
C510
C850
C851
D851
R855
D440
C415
C420
C421
C422
C423
C424
C425
C427
DGND
AGND
KN100
P100
U100
IC750
L750
R752
R751
R750
C750
C426
C101
C310
C511
R323
R303
IC510
R510
MIC
CN300
C443
C400
IC400
R857
C401
C402
C403
C404
C406
C405
C407
R411
C412
C432
C431
C414
C364
C351
C350
R350
C360
C361
C362
C309
R302
IC350
R435
R434
C411
L410
C430
C410
C433
C413
VR430
R433
R432
MC430
R101
R102
R100
C363
D431
D620
R630
L630
IC280
R301
IC300
R316
C305
C370
Q360
D360
R360
R361
R23
R22
R61
R63
R51
R50
C371
R362
R363
R364
R20
R18
R17
X1
IC35
C35
R36
C1
C300
C304
R803
IC1
IC50
R53
BTTX2
BTRX2
R14
R9
L2
C6
R4
R6
R7
R103
C105
Q101
Q100
FM/AM TUNER UNIT
IC60
R64
R65
D102
D101
D100
C133
C130
R71
IC70
R858
DGND2
R70
R60
R62
R30
R28
R29
R3
R2
IC40
C40
R41
R40
R42
R19
HOT
CN800
IC700
D701
L700
C705
R702
KN81
C106
CN1
R87
R86
R85
R84
R83
R82
R81
R80
B
CN901
R705
R700
D700
C708
R701
R708
C704
C703
C15
R88
CN80
BZ1
FRONT

A

A COMBI PWB UNIT


▨ JP
▨ ES
▨ EW
▨ UC
▨ PUC
C753
C754
C755
R763
R764
P.RR
P.SWR
P.SWL
PREGND
P.FR
P.FL
C758
Q750
BUS+
C756
C757
C472
C452
C453
C473
P.RL
C462
C463
R758
BUS-
BUSL+
R472
R452
R453
R473
R462
R463
R582
R490
RL
RR
FR
FL
24
25
SWDB
BUSR+
BUSR-
BUSL-
AGND
R563
R562
R573
R572
Q851
R852
DGND
C109
L105
C441
RF
RFGND
AGND
DGND
R762
R761
Q441
R440
Q440
C752
C751
VP12V
R760
C442
HFMIC
R354
R355
C352
R356
R351
R357
C354
C353
R353
R352
L104
L100
AMANT
RFGND
FMANT
VCC
SL
C100
CE2
NC
CE1
CK
DI
L101
C102
VDD5V
A8V
R430
R412
MGND
D430
MIC
C355
R312
R311
C308
R313
LDET
OSCGND
C81
C107
C108
R431
C434
R24
R314
R373
R372
R315
C311
C375
R35
D35
C7
C8
L1
C374
C373
R377
R376
R375
C372
R374
R371
C307
C306
R318
R319
R317
HFGND
D300
ROMVDD
C103
L102
DO
DGND
NC
VDD
DGND
R16
R15
R321
R322
C312
R320
C104
L103
C3
C2
R10
L3
C11
D301
Q300
C12
RDS-CK
RDS-DATA
RDS-LOCK
RDS-HSLK
AGND
LCH
RCH
R11
R13
R12
C9
R21
R27
R31
R52
L50
C50
C13
C5
R5
R8
TEST
C4
PCL
R26
R25
L60
C60
L70
C70
R1
TU3.3V
IC130
C10
R800
C131
C132
C14
C90
C91
SW5V
R704
C709
R703
R706
C707
C706
Q90
R92
L90
R90
R91
Q701
D80
D83
D82
VCC
CLK
RXD
TXD
EPM
GND
DIM
INDTEL
DPDT
DGND1
SWVDD
OELGND
OEL+B
R89
R683
C70
16
2
HOLGND
L701
OEL15V
C701
CE
BUSY
RESET
15
1
D81
CNVss
INDAV
KYDT
RESET
DISP OFF
ILM+B
ILMGND
C702
OEL9V
A

SIDE B

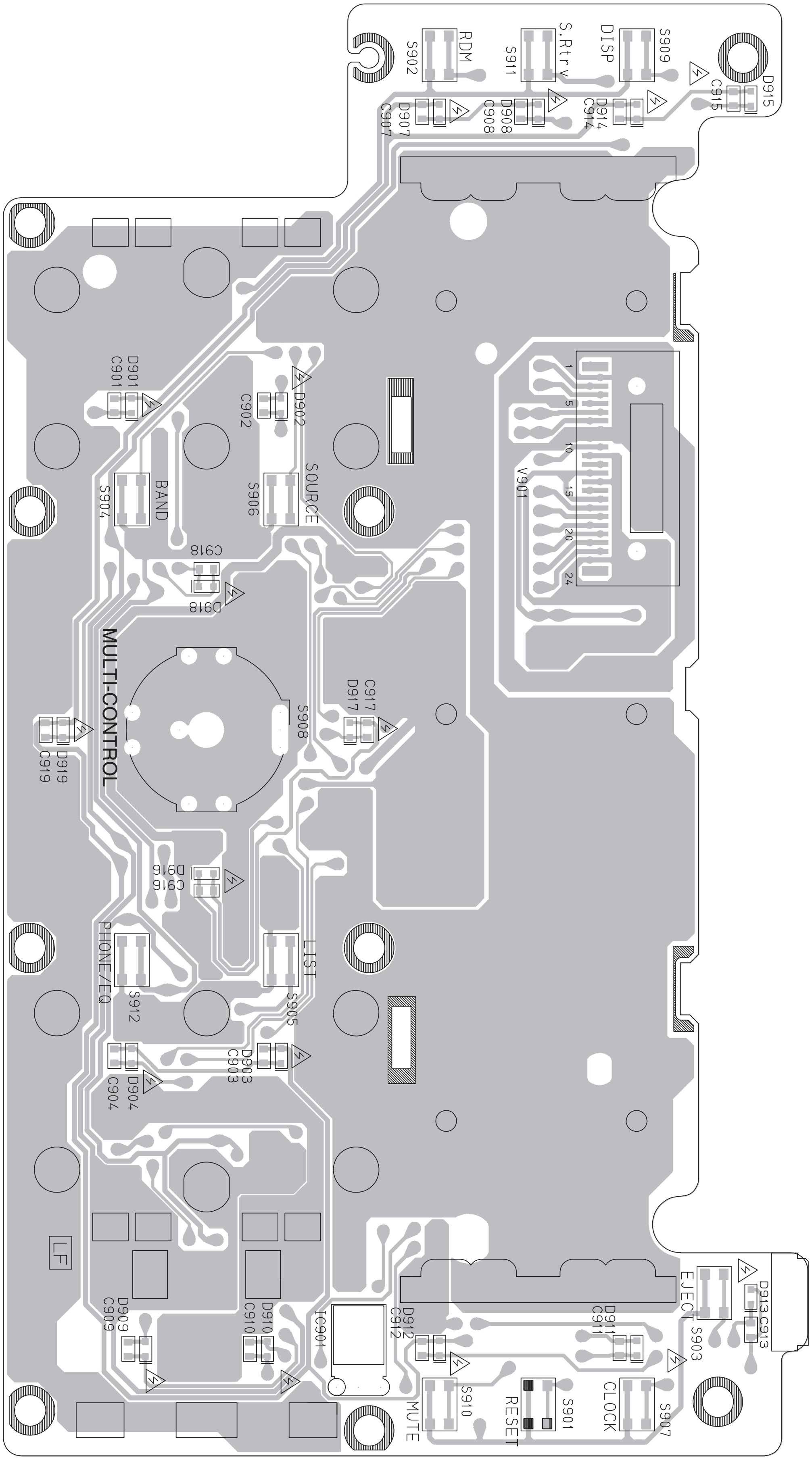

A
B
C
D
E
F
C611
C512
C500
C631
C621
GND
2
1
ACC
B.REM
A.ANT
T.MUTE
ILL
BU
16
15
FR
FL
D151
C151
C150
D150
D161
WRGND
D290
D291
C160
D160
C161
C162
USBDM1
USBDP1
USBGND1
C292
C663
R660
C662
VDD5V
B.U
DGND
Q630
R633
R632
R631
D630
C630
OEL-GND
HFMIC
R354
C352
R356
R357
C354
R355
R351
C353
R353
R352
C652
R651
Q651
C651
R650
R312
R311
C308
R313
R621
C620
R610
R611
C610
Q610
USBGND
USBDM
GND
LOUT
ROUT
VDD
BDATA
BSCK
BSRQ
VD
VD7.5V
R373
R314
R372
R315
C311
R371
HFGND
Q620
C286
R286
R285
R615
R614
R613
Q251
D672
R671
Q671
C250
C307
C306
R318
R319
R317
D300
Q301
R287
R284
R283
R282
C284
C285
C287
C204
C205
C201
L200
C200
BT5V
C312
R320
C302
R308
R305
R309
R306
C303
R304
R310
R307
C301
R300
C206
CD3.3V
19
18
C675
C676
IC670
C12
C13
C677
C262
R202
R200
USBGND
USBDP
DGND
AGND
DGND
RESET
RESET
BRXEN
BRST
VD
R806
C202
R201
R203
C808
C260
C803
R682
R807
R801
R800
C805
R441
IC260
L803
R859
C804
C800
C807
R681
C680
BT3.3V
Q681
L800
L802
C682
R814
C809
C801
L801
C681
Q680
Q701
R813
R812
C806
D800
R811
R810
C700
C802
Q682
C701
C683
C702
OEL9V
R707
Q700
LF

A

11.2 KEYBOARD UNIT

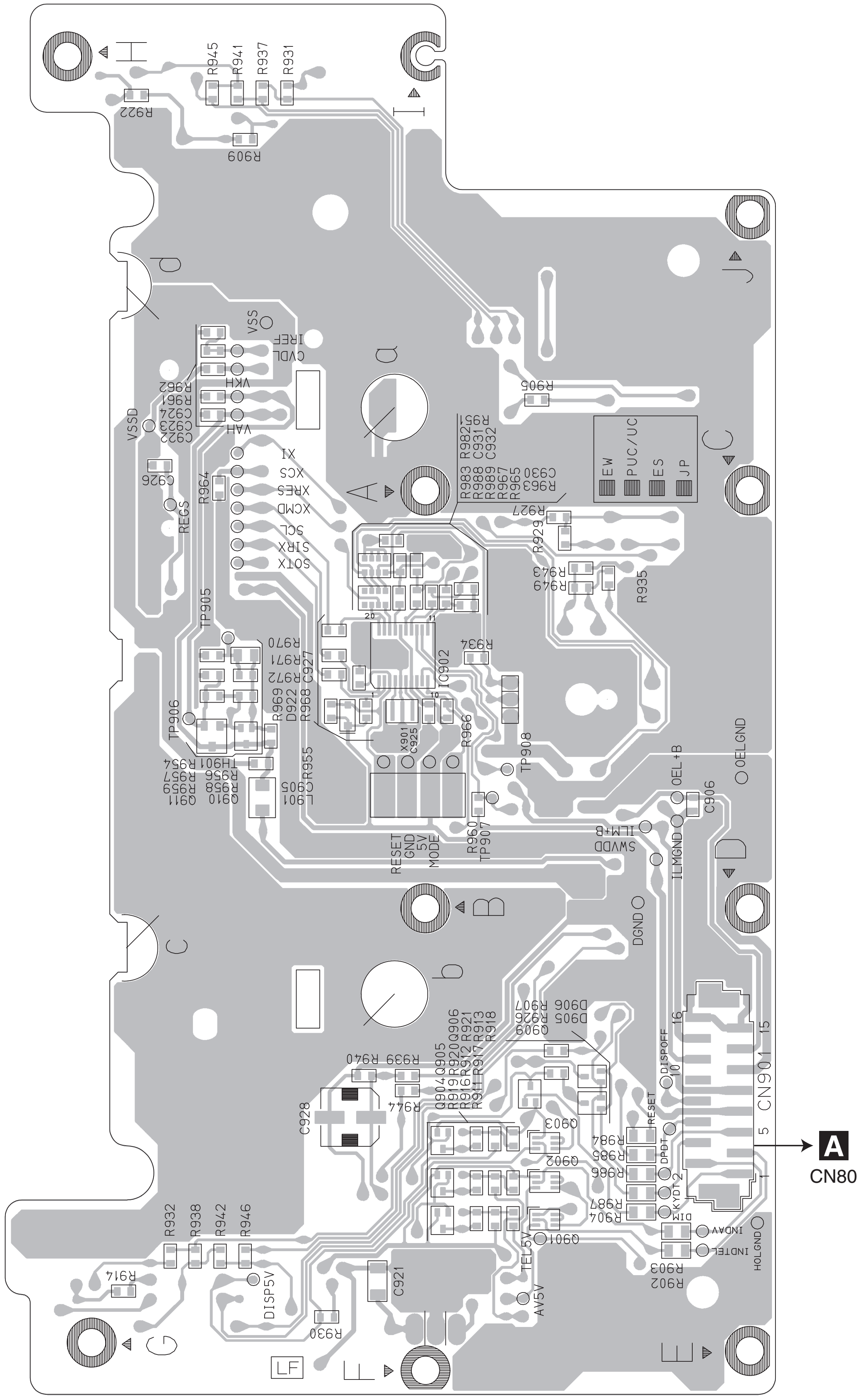
B KEYBOARD UNIT

SIDE A


S902
RDM
S911
S.Rtry
DISP
S909
D915
C915
D907
C907
D908
C908
D914
C914
D901
C901
C902
D902
S904
BAND
S906
SOURCE
V901
1
5
10
15
20
24
C918
D918
MULTI-CONTROL
S908
C917
D917
D919
C919
D916
C916
PHONE/EQ
S912
LIST
S905
D903
C903
D904
C904
LF
D909
C909
D910
C910
IC901
D912
C912
D911
C911
EJECT
S903
D913
C913
S910
MUTE
S901
RESET
CLOCK
S907

B KEYBOARD UNIT

SIDE B

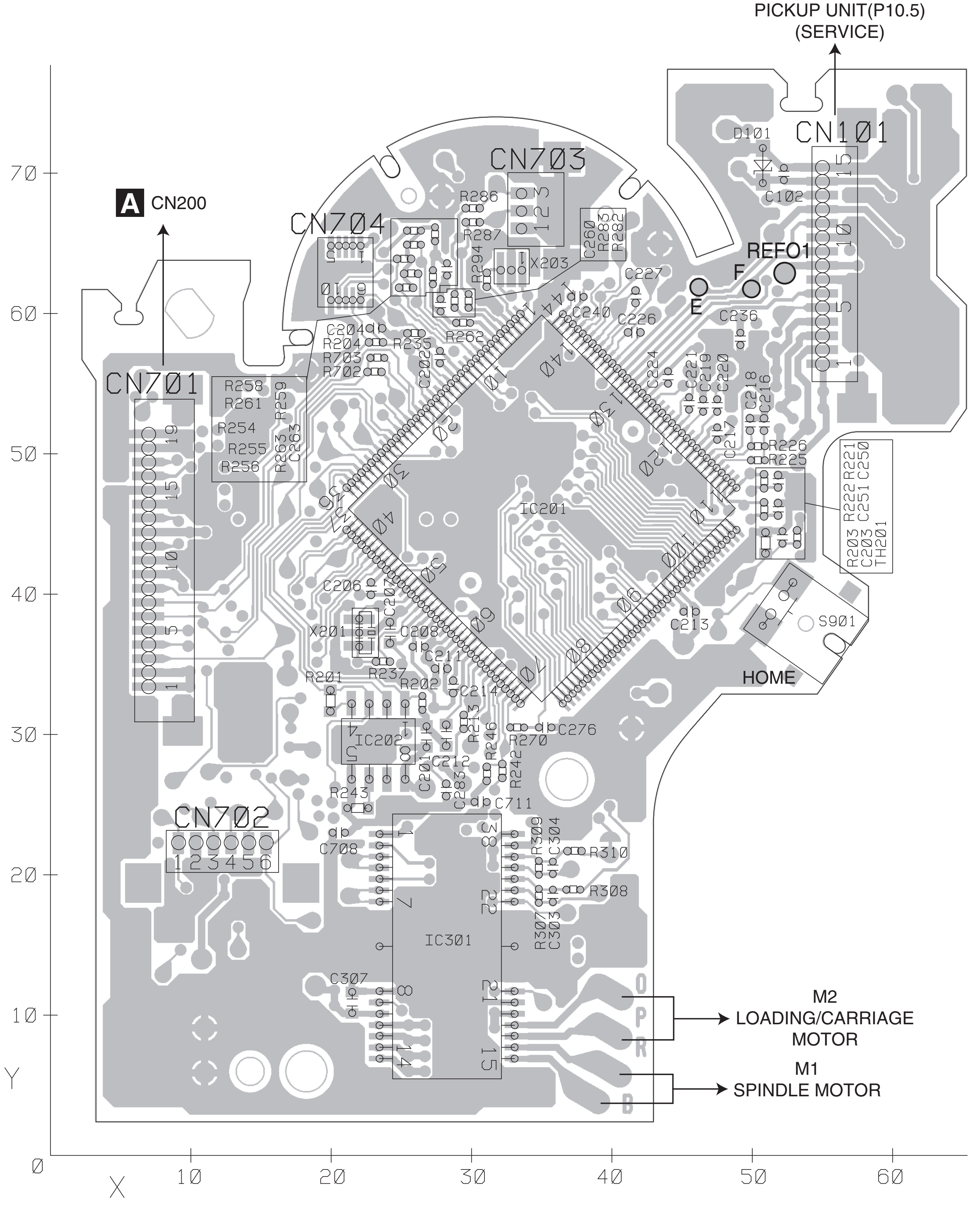

H
R945
R941
R937
R931
I
R922
R909
J
d
VSS
IREF
CVDL
VKH
VAH
R962
R961
C924
C923
C922
VSSD
a
R905
R951
R982
C931
C932
R983
R988
R989
R967
R965
C930
R963
EW
PUC/UC
ES
JP
C
XI
XCS
XRES
XCMD
SCL
SIRX
SOTX
C926
R964
REGS
A
R927
R929
R943
R949
R935
TP905
R970
R971
C927
R972
D922
R968
R969
R934
IC902
TP906
X901
C925
R966
TH901
R954
R957
R959
Q911
R956
R958
Q910
C905
L901
R955
TP908
OEL+B
OELGND
C906
ILM+B
SWVDD
ILMGND
RESET
GND
5V
MODE
R960
TP907
D
B
DGND
c
b
D905
D906
R926
R907
Q909
Q904
Q905
R919
R920
Q906
R916
R912
R921
R911
R917
R913
R918
R939
R940
R944
C928
Q903
Q902
DISPOFF
RESET
DPDT
KYDT2
DIM
R984
R985
R986
R987
R904
Q901
TEL5V
INDAV
INDTEL
HOLGND
R903
R902
CN901
16
15
10
5
1
A
CN80
R932
R938
R942
R946
R914
DISP5V
C921
AV5V
R930
G
LF
F
E

B

11.3 CD CORE UNIT(S10.5COMP2-iPod-C2)

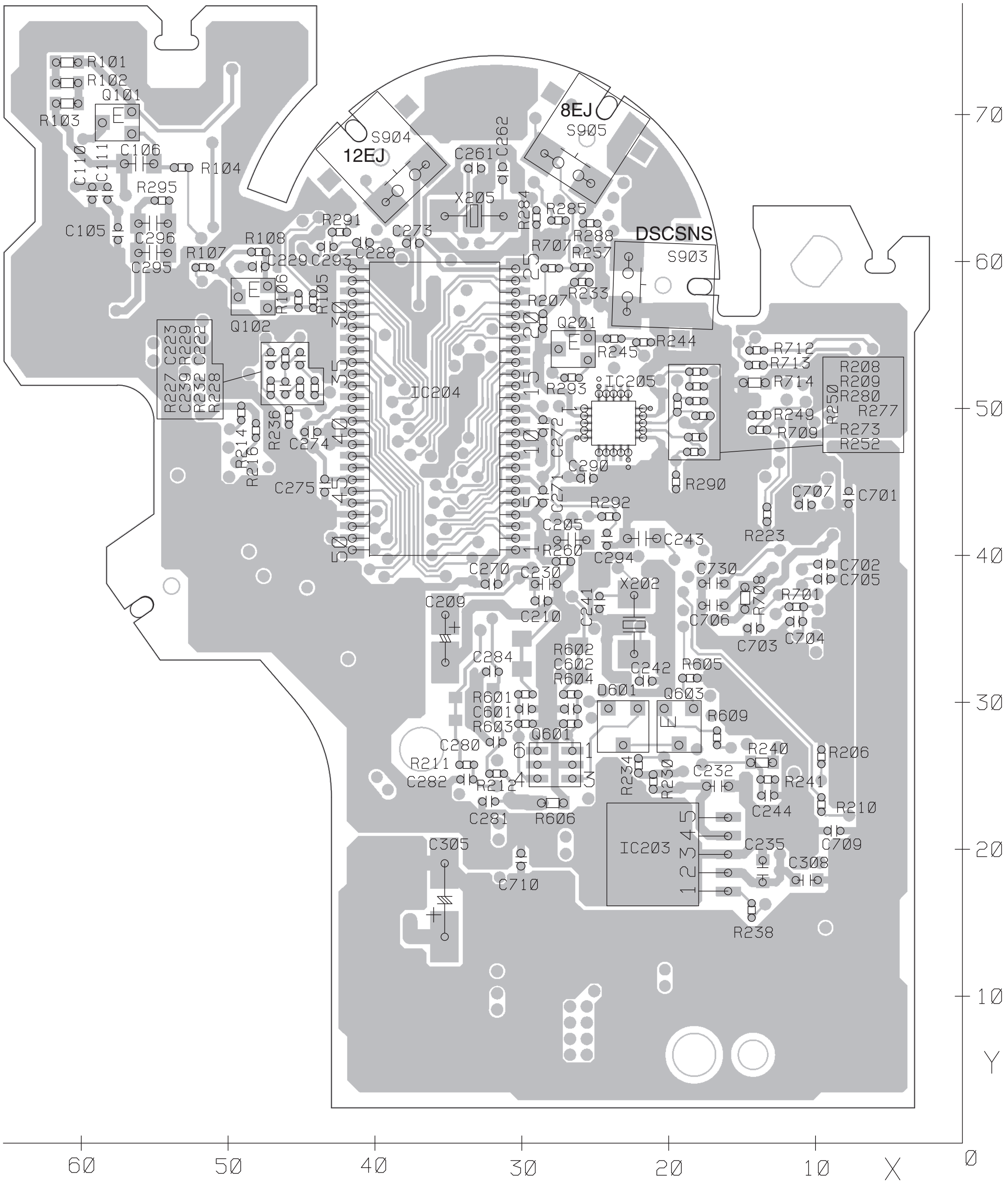
C CD CORE UNIT(S10.5COMP2-iPod-C2)

SIDE A


PICKUP UNIT(P10.5)
(SERVICE)
A CN200
CN101
D101
C102
15
10
5
1
REFO1
F
E
CN703
1 2 3
R286
R287
R294
X203
C260
R283
R282
C227
C226
C236
C240
CN704
10
1
6
CN701
19
15
10
5
1
R258
R261
R259
R254
R255
R256
R263
C263
C204
R204
R703
R702
R235
R262
C202
C224
C221
C219
C220
C218
C216
C217
R226
R225
R222 R221
C251 C250
R203
C203
TH201
IC201
1
10
20
30
36
40
50
60
70
80
90
100
110
120
130
140
144
C206
C207
X201
C208
C211
R237
R201
R202
C214
C213
S901
HOME
IC202
1
4
5
8
C201
C212
C283
R213
R246
R242
R270
C276
R243
C711
CN702
1 2 3 4 5 6
C708
IC301
1
7
8
14
15
21
22
28
R309
C304
R310
R308
R307
C303
C307
O
P
R
B
M2
LOADING/CARRIAGE
MOTOR
M1
SPINDLE MOTOR
70
60
50
40
30
20
10
0
Y
X
10
20
30
40
50
60

C CD CORE UNIT(S10.5COMP2-iPod-C2)

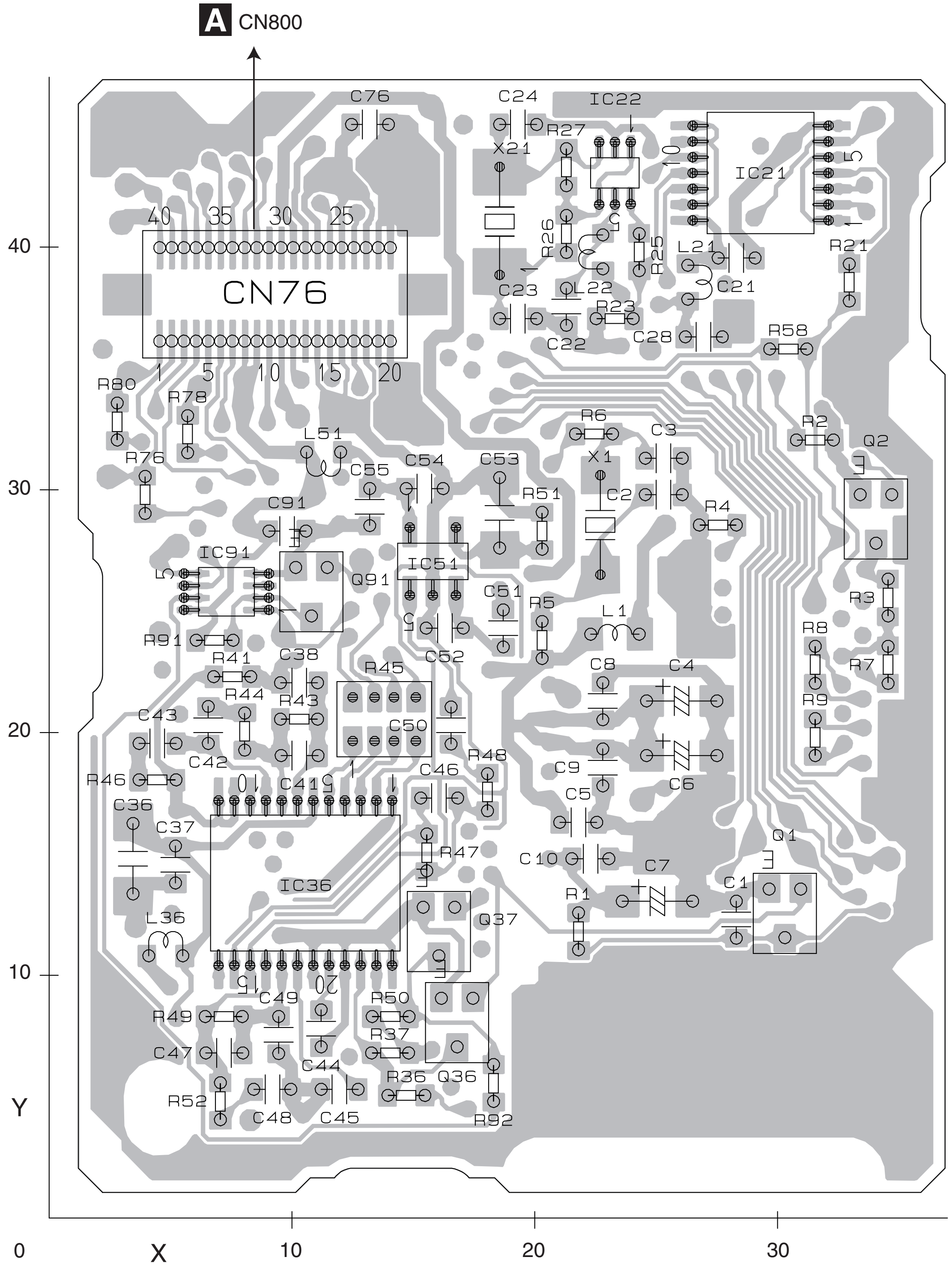
SIDE B


R101
R102
Q101
R103
C106
C110
C111
R104
R295
C105
C296
C295
R107
R108
C229
C293
C228
R291
C273
S904
12EJ
C261
C262
X205
R284
R285
8EJ
S905
R288
R707
R257
DSCSNS
S903
R207
R233
Q201
R245
R244
Q102
R106
R105
R227
C223
C239
R229
R232
C222
R228
R214
R216
R236
C274
C275
IC204
R293
IC205
C272
C290
C271
R292
C205
R260
C294
C243
R712
R713
R714
R249
R709
R208
R209
R280
R250
R277
R273
R252
R290
C707
C701
R223
C730
C702
C705
R708
R701
C706
C703
C704
C270
C230
C241
X202
C209
C210
C284
R602
C602
R604
C242
R605
D601
Q603
R601
C601
R603
R609
C280
Q601
R211
C282
R212
R234
R230
C232
R240
R241
R206
C281
R606
C244
R210
C305
IC203
C235
C709
C308
C710
R238
Y
X
70
60
50
40
30
20
10
0

11.4 BLUETOOTH UNIT

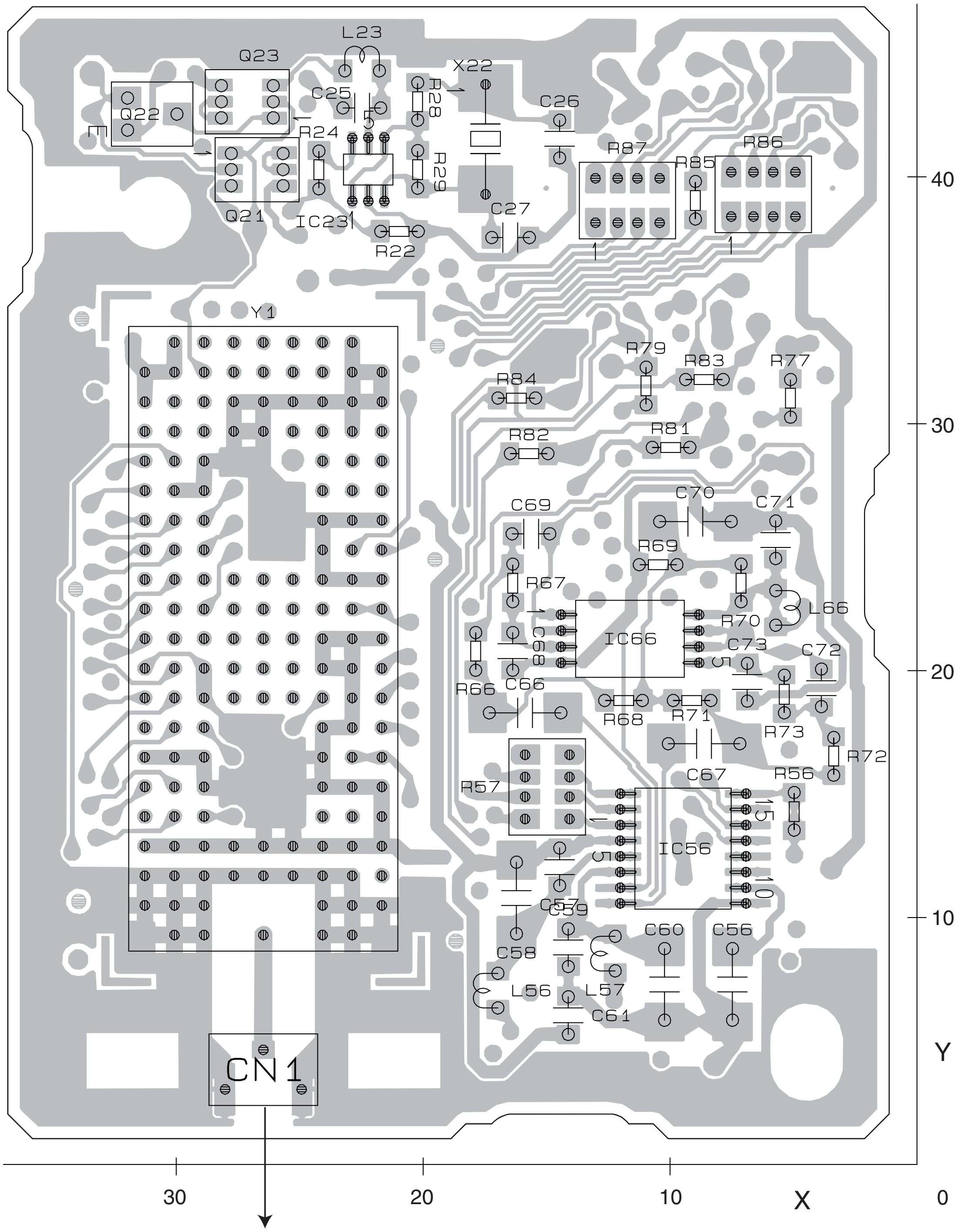
D BLUETOOTH UNIT

SIDE A


A CN800
CN76
40 35 30 25
1 5 10 15 20
C76
C24
IC22
R27
X21
IC21
10
5
1
R26
R25
L21
R21
C21
C23
L22
R23
C22
C28
R58
R80
R78
R76
R6
C3
R2
Q2
L51
C55
C54
C53
X1
C2
R51
R4
C91
IC91
Q91
IC51
C51
R5
L1
R3
R8
R7
R91
R41
C38
R45
C52
C8
C4
R9
R44
R43
C43
C50
C42
R48
C9
C6
R46
C41
C46
C5
C36
C37
Q1
R47
C10
C7
C1
IC36
R1
L36
Q37
15
20
C49
R50
R49
R37
C47
C44
R36
Q36
R52
C48
C45
R92
40
30
20
10
0
X
Y
10
20
30

D BLUETOOTH UNIT

SIDE B

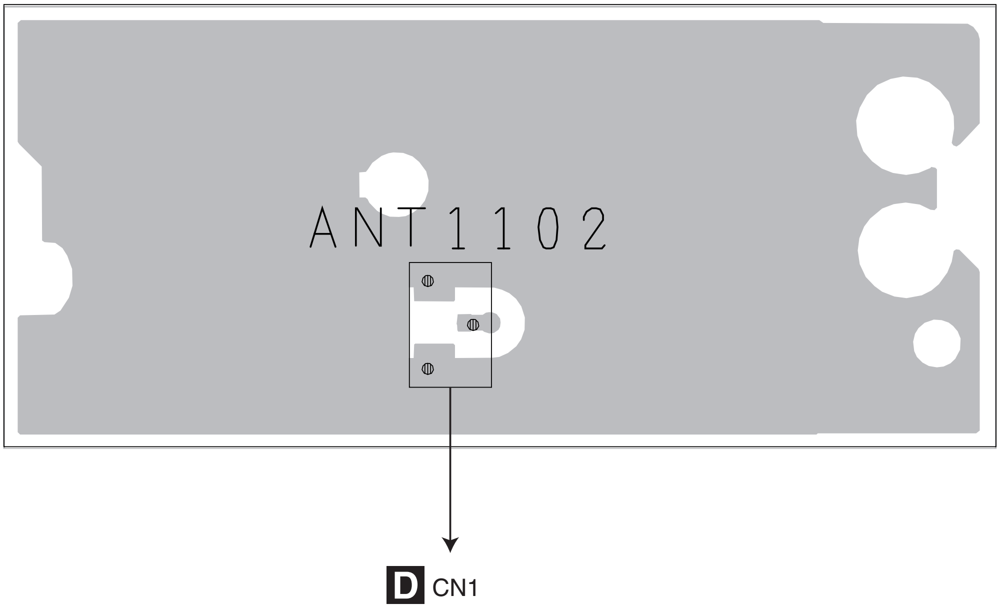

L23
Q23
X22
C25
R28
Q22
C26
E
R24
R87
R86
R85
R29
40
Q21
IC23
C27
R22
Y1
R79
R83
R77
R84
R81
30
R82
C70
C69
C71
R69
R67
L66
IC66
R70
C68
C73
C72
5
20
R66
C66
R68
R71
R73
R72
C67
R56
R57
15
IC56
5
10
C57
C59
C60
C56
10
C58
L56
L57
C61
Y
CN1
30
20
10
X
0

E ANT1102

11.5 ANTENNA UNIT

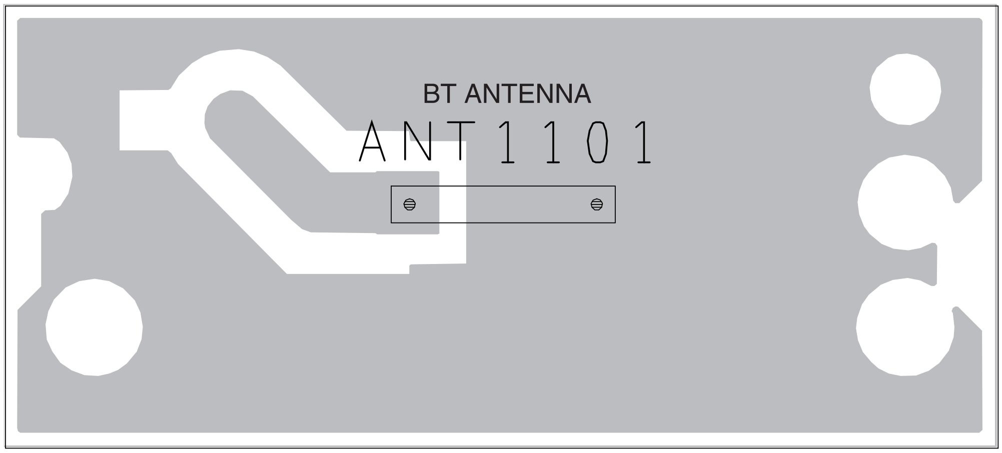
E ANTENNA UNIT

SIDE A


ANT1102
D CN1

E ANTENNA UNIT

SIDE B


BT ANTENNA
ANT1101

E

12. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

  Chip Resistor

  RS1/○S○○○J,RS1/○○S○○○J

  Chip Capacitor (except for CQS.....)

  CKS....., CCS....., CSZS.....
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Meaning of the figures and others in the parentheses in the parts list.*

  Example) IC 301 is on the point (face A, 91 of x-axis, and 111 of y-axis) of the corresponding PC board.

  IC 301 (A, 91, 111) IC NJM2068V
- *The expression of the unit in this manual is shown by u instead of µ. Please do not make a mistake.*

Circuit Symbol and No. **Part No.**

Unit Number : CZW5569
(FH-P800BT/XJ/UC)
Unit Number : CZW5570
(FH-P8000BT/XJ/UC)
Unit Number : CZW5568
(FH-P80BT/XJ/EW5)
Unit Name : Combi PWB Unit
Unit Number : CZW5571
(FH-P6050UB/XJ/ES)
Unit Name : Comb PWB Unit
Unit Number : CZW5574(UC)
Unit Number : CZW5573(EW5)
Unit Number : CZW5575(ES)
Unit Name : Keyboard Unit
Unit Number : CWN3394(UC,EW5)
Unit Name : Bluetooth Unit
Unit Number : CWX3624
Unit Name : CD Core Unit
(S10.5COMP2-iPod-C2)

A

Unit Number : CZW5569
(FH-P800BT/XJ/UC)
Unit Number : CZW5570
(FH-P8000BT/XJ/UC)
Unit Number : CZW5568
(FH-P80BT/XJ/EW5)

Circuit Symbol and No. **Part No.**

Unit Name : Combi PWB Unit

MISCELLANEOUS

Circuit Symbol and No.		Part No.
IC 1	IC(UC)	PEG437A
IC 1	IC(EW5)	PEG436A
IC 35	IC	PST3435UL
IC 50	IC	TC74VHCT08AFTS1
IC 60	IC	TC74VHC08FTS1
IC 70	IC	LE25FW203PATT
IC 130	IC	NJM2885DL1-33
IC 260	IC	NJM2885DL1-33
IC 280	Regulator IC	BD9781HFP
IC 290	IC	R5523N001B
IC 300	IC	NJM4558MD
IC 350	IC	BA3131FS
IC 400	IC	PML017A
IC 510	IC(FH-P800BT/XJ/UC)	TPD1018F
IC 550	IC	PA2029A
IC 660	IC	NJM2388F84
IC 670	IC	NJM2885DL1-33
IC 700	IC	NJM2360M
IC 750	IC	HA12241FP
Q 90	Transistor	UMF23N
Q 100	Transistor(EW5)	RT3N22M
Q 101	Transistor(EW5)	RT3N22M
Q 250	Transistor	2SD2396
Q 251	Transistor	UMD2N
Q 300	Transistor	DTC314TU
Q 301	Transistor	DTC314TU
Q 360	Chip Transistor	DTC124EUA
Q 440	Transistor	2SD1767
Q 441	Transistor	UMD2N
Q 450	Transistor	IMH23
Q 460	Transistor	IMH23
Q 470	Transistor	IMH23
Q 490	Transistor	UMD2N
Q 610	Transistor	RT3CLLM
Q 620	Chip Transistor	DTC114EUA
Q 630	Transistor	2SB1218A
Q 650	Transistor	2SD2396

Circuit Symbol and No.		Part No.
Q 651	Transistor	UMD2N
Q 670	Transistor	2SD2396
Q 671	Transistor	UMD2N
Q 680	Transistor	2SD1767
Q 681	Transistor	UMD2N
Q 682	Chip Transistor	DTC114EUA
Q 700	Transistor	2SD1760F5
Q 701	Transistor	UMD2N
Q 750	Transistor	UMF23N
Q 850	Chip Transistor	DTC114EUA
Q 851	Chip Transistor	DTC124EUA
Q 852	Transistor	2SD1819A
D 35	Diode	MA2J11100L
D 80	Diode	HZM6R8ZMWA
D 81	Diode	HZM6R8ZMWA
D 82	Diode	HZM6R8ZMWA
D 83	Diode	HZM6R8ZMWA
D 100	Diode	1A4
D 101	Diode	1A4
D 150	Diode	HZM6R8ZMWA
D 151	Diode	HZM6R8ZMWA
D 160	Diode	HZM6R8ZMWA
D 161	Diode	HZM6R8ZMWA
D 250	Diode	HZS7L(C3)
D 280	Diode	1A4
D 281	Diode	SM240A
D 290	Diode	HZM6R8ZMWA
D 291	Diode	HZM6R8ZMWA
D 300	Diode	MA2J11100L
D 301	Diode	MA2J11100L
D 360	Diode	MA3J142E0L
D 430	Diode(EW5)	DA204U
D 431	Diode(EW5)	DA204U
D 440	Diode	HZS12L(B1)
D 490	Diode	1SS133
D 510	Diode	1A4
D 511	Diode	1A4
D 600	Diode	1A4
D 601	Diode	1A4
D 610	Diode	HZS7L(C3)
D 611	Diode	HZS7L(A1)
D 620	Diode	1SS133
D 630	Diode	MA3J142E0L
D 650	Diode	1A4
D 651	Diode	HZS6L(B1)
D 670	Diode	1A4
D 671	Diode	HZS6L(B1)
D 672	Diode	MA3J142E0L
D 680	Diode	HZS12L(A2)
D 681	Diode	HZS9L(C3)
D 700	Diode	HZS11L(A1)
D 701	Diode	RB551V-30
D 800	Diode	MA3J142E0L
D 850	Diode	MA3J142E0L
D 851	Diode	HZU8R2(B3)
L 1	Inductor	CTF1379
L 2	Inductor	CTF1379
L 3	Chip Coil	CTZ2931
L 90	Chip Coil	LCTAW100J2520
L 101	Coil	CZT2937

Circuit Symbol and No.		Part No.
L 102	Chip Coil	CTZ2931
L 103	Chip Coil	CTZ2931
L 104	Chip Coil	LCTAW4R7J2520
L 105	Inductor	LCTAW2R2J2520
L 200	Inductor	CTF1379
L 280	Inductor	CTH1385
L 410	Chip Coil	CTZ2931
L 600	Coil	CZT2936
L 630	Inductor	LAU2R2J
L 700	Inductor	CTF1660
L 701	Chip Coil	CTZ2931
L 750	Inductor	CTF1379
L 800	Inductor	CTF1379
L 801	Inductor	CTF1379
L 802	Inductor	CTF1379
T 290	Inductor	CTF1713
X 1	Crystal Resonator 20 MHz	CZS2926
⚠FU450	Fuse 3 A	CEK1286
JA450	Jack	XKB7001
JA750	Connector	CKS3408
P 100	Surge Protector	IMSA-6802-01Y900
F 990	BT Antenna	CWX3132
⚠	Fuse 10 A	CEK1208
JA100	Antenna Jack	CKX1056
JA290	Connector	CKS5669
SP1	Clamper	CZE2961
JA600	Plug	CKM1376
JA150	Jack	YKS5001
KN100	Jack	CZK2969
U 100	FM/AM Tuner Unit(UC)	CWE2098
U 100	FM/AM Tuner Unit(EW5)	CWE2097
KN80	Jack	CZK2969
BZ1	Buzzer	CPV1062
VR430	Semi-fixed(EW5) 10 kohm(B)	CZC2644
MC430	Microphone(EW5)	CPM1068

RESISTORS

R 1		RS1/16S104J
R 2		RS1/16S104J
R 3		RS1/16S104J
R 4		RS1/16S103J
R 5	(FH-P8000BT/XJ/UC)	RS1/16S473J
R 6	(FH-P800BT/XJ/UC)	RS1/16S473J
R 7		RS1/16S103J
R 8		RS1/16S473J
R 9		RS1/16S0R0J
R 11		RS1/16S103J
R 12		RS1/16S104J
R 13		RS1/16S104J
R 14		RS1/16S104J
R 16		RS1/16S471J
R 17		RS1/16S473J
R 18		RS1/16S222J
R 19		RS1/16S102J
R 20		RS1/16S104J
R 21		RS1/16S104J
R 22		RS1/16S472J
R 23		RS1/16S472J
R 24		RS1/16S104J

Circuit Symbol and No.	Part No.
R 25	RS1/16S473J
R 27	RS1/16S103J
R 28	RAB4C681J
R 29	RAB4C681J
R 30	RAB4C681J
R 31	RS1/16S102J
R 35	RS1/16S473J
R 36	RS1/16S102J
R 40	RS1/16S473J
R 50	RS1/16S681J
R 51	RS1/16S681J
R 53	RAB4C681J
R 60	RS1/16S182J
R 61	RS1/16S182J
R 62	RS1/16S332J
R 63	RS1/16S332J
R 64	RAB4C681J
R 65	RAB4C681J
R 70	RS1/16S101J
R 71	RAB4C101J
R 80	RS1/16S102J
R 81	RS1/16S102J
R 82	RS1/16S102J
R 83	RS1/16S102J
R 84	RS1/16S102J
R 85	RS1/16S102J
R 86	RS1/16S102J
R 87	RS1/16S1R0J
R 88	RS1/16S0R0J
R 89	RS1/16S0R0J
R 90	RS1/16S473J
R 91	RS1/16S102J
R 100 (EW5)	RS1/16S681J
R 101	RAB4C681J
R 102	RAB4C681J
R 103 (EW5)	RAB4C223J
R 150	RS1/16S102J
R 151	RS1/16S102J
R 160	RS1/16S101J
R 161	RS1/16S101J
R 162	RS1/16S223J
R 163	RS1/16S223J
R 200	RS1/16S473J
R 201	RS1/16S104J
R 202	RS1/16S221J
R 203	RS1/16S102J
R 204	RAB4C682J
R 205	RAB4C221J
R 250	RD1/4PU102J
R 280	RS1/16S104J
R 281	RS1/16S0R0J
R 282	RS1/16S683J
R 284	RS1/16S471J
R 285	RS1/16S333J
R 286	RS1/16S3302F
R 287	RS1/16S8201F
R 300	RS1/16S220J
R 301	RS1/16S103J
R 302	RS1/16S103J
R 303	RS1/16S102J
R 305	RS1/16S332J

Circuit Symbol and No.	Part No.
R 306	RS1/16S272J
R 307	RS1/16S223J
R 308	RS1/16S153J
R 309	RS1/16S333J
R 310	RK1/16S823J
R 311	RS1/16S104J
R 312	RS1/16S151J
R 313	RS1/16S473J
R 315	RS1/16S473J
R 316	RS1/16S473J
R 317	RS1/16S473J
R 318	RS1/16S473J
R 319	RS1/16S223J
R 320	RS1/16S102J
R 321	RS1/16S473J
R 322	RS1/16S102J
R 323	RS1/16S102J
R 350	RS1/16S473J
R 351	RS1/16S473J
R 352	RS1/16S473J
R 353	RS1/16S473J
R 354	RS1/16S223J
R 355	RS1/16S183J
R 356	RS1/16S473J
R 357	RS1/16S473J
R 360	RS1/16S472J
R 361	RS1/16S272J
R 362	RS1/16S102J
R 363	RS1/16S102J
R 370	RS1/16S473J
R 371	RS1/16S473J
R 372	RS1/16S473J
R 373	RS1/16S473J
R 374	RS1/16S223J
R 375	RS1/16S183J
R 376	RS1/16S473J
R 377	RS1/16S473J
R 411	RAB4C102J
R 430	RS1/16S104J
R 431	RS1/16S104J
R 432 (EW5)	RS1/16S222J
R 433 (EW5)	RS1/16S561J
R 434 (EW5)	RS1/16S101J
R 435 (EW5)	RS1/16S101J
R 440	RS1/16S561J
R 441	RS1/16S110J
R 450	RS1/16S390J
R 451	RS1/16S390J
R 452	RS1/16S223J
R 453	RS1/16S223J
R 460	RS1/16S390J
R 461	RS1/16S390J
R 462	RS1/16S223J
R 463	RS1/16S223J
R 470	RS1/16S390J
R 471	RS1/16S390J
R 472	RS1/16S223J
R 473	RS1/16S223J
R 480	RS1/16S0R0J

Circuit Symbol and No.		Part No.
R 482		RS1/16S0R0J
R 490		RK1/16S820J
R 491		RS1/16S102J
R 510	(FH-P800BT/XJ/UC)	RS1/16S103J
R 550		RS1/16S472J
R 551		RS1/16S472J
R 560		RS1/16S182J
R 561		RS1/16S182J
R 562		RS1/16S272J
R 563		RS1/16S272J
R 570		RS1/16S182J
R 571		RS1/16S182J
R 572		RS1/16S272J
R 573		RS1/16S272J
R 580		RS1/16S153J
R 582	(FH-P8000BT/XJ/UC,EW5)	RS1/16S0R0J
R 610		RS1/16S473J
R 611		RS1/16S104J
R 612		RD1/4PU102J
R 613		RS1/16S472J
R 614		RS1/16S473J
R 615		RS1/16S103J
R 620		RD1/4PU102J
R 621		RS1/16S103J
R 630		RD1/4PU153J
R 632		RS1/16S473J
R 633		RS1/16S102J
R 650		RS1/16S222J
R 651		RS1/16S223J
R 660		RS1/16S473J
R 671		RS1/16S472J
R 680		RD1/4PU102J
R 681		RS1/16S110J
R 682		RS1/16S472J
R 683		RS1/16S472J
R 700		RD1/4PU681J
R 701		RS1/16S1R0J
R 702		RS1/16S821J
R 703		RS1/16S391J
R 704		RS1/16S122J
R 705		RD1/4PU332J
R 707		RS1/16S2R2J
R 708		RS1/16S1R0J
R 750		RS1/16S101J
R 751		RS1/16S472J
R 752		RS1/16S102J
R 753		RS1/16S102J
R 754		RS1/16S102J
R 755		RS1/16S223J
R 756		RS1/16S223J
R 757		RS1/16S181J
R 758		RS1/16S222J
R 759		RS1/16S181J
R 760		RS1/16S101J
R 761		RS1/16S101J
R 762		RS1/16S620J
R 763		RS1/16S332J
R 764		RS1/16S562J
R 800		RS1/16S102J
R 801		RS1/16S102J
R 812		RS1/16S102J

Circuit Symbol and No.		Part No.
R 813		RS1/16S102J
R 814		RS1/16S102J
R 850		RS1/16S101J
R 851		RS1/16S331J
R 852		RS1/16S103J
R 853		RS1/16S103J
R 854		RS1/16S472J
R 855		RS1/16S104J
R 856		RS1/16S473J
R 857		RS1/16S473J
R 858		RS1/16S102J
R 859		RS1/16S102J

CAPACITORS

C 1	10 uF/16 V	CZC2660
C 2		CKSRYB104K50
C 3		CKSRYB103K50
C 4		CKSRYB104K50
C 5	(FH-P800BT/XJ/UC)	CKSRYB104K50
C 6		CKSRYB104K50
C 7		CCSRCH150J50
C 8		CCSRCH150J50
C 9		CKSRYB103K50
C 10		CCSRCH470J50
C 11		CKSQYB475K6R3
C 12		CCSRCH101J50
C 13		CCSRCH101J50
C 14	(FH-P800BT/XJ/UC)	CCSRCH101J50
C 15		CKSRYB562K50
C 35		CKSQYB225K10
C 40		CKSRYB104K50
C 50		CKSRYB104K50
C 60		CKSRYB104K50
C 70		CKSRYB104K50
C 81		CKSRYB102K50
C 90	(FH-P800BT/XJ/UC)	CKSRYB473K50
C 91	(FH-P800BT/XJ/UC)	CKSRYB473K50
C 100		CKSRYB104K50
C 101		CEJQ101M16
C 102	(FH-P800BT/XJ/UC)	CKSRYB104K50
C 109		CKSRYB102K50
C 130	10 uF/16 V	CZC2660
C 131		CKSRYB103K50
C 132		CKSRYB103K50
C 133		CEJQ220M16
C 162		CKSRYB103K50
C 200		CKSRYB102K50
C 201		CKSRYB103K50
C 206		CCSRCH101J50
C 250		CKSRYB103K50
C 251		CKSRYB102K50
C 252		CEJQ101M16
C 260		CKSRYB474K10
C 261		CEJQ220M16
C 262		CKSRYB103K50
C 280		CEJQ101M16
C 281		CKSQYB105K16
C 282	150 uF/6.3 V	CZC2970
C 283		CKSRYB104K50

Circuit Symbol and No.		Part No.
C 284		CKSRYB103K50
C 286		CCSRCH221J50
C 287		CCSRCH221J50
C 290		CKSRYB104K50
C 291		CKSRYB104K50
C 300		CEAT330M16
C 301		CKSRYB104K50
C 302		CKSRYB682K50
C 303		CCSRCH331J50
C 304		CKSRYB104K50
C 305		CCSRCH470J50
C 306		CKSRYB104K50
C 307		CKSRYB104K50
C 308		CKSRYB104K50
C 309		CEJQ2R2M50
C 310		CKSRYB102K50
C 311		CKSRYB102K50
C 312		CKSRYB102K50
C 350		CKSRYB105K10
C 351		CKSRYB105K10
C 352		CCSRCH470J50
C 353		CCSRCH220J50
C 354		CCSRCH220J50
C 355		CKSRYB105K10
C 360		CKSRYB103K50
C 361	10 uF/16 V	CZC2660
C 362		CEJQ220M16
C 363		CEJQ101M16
C 364		CKSRYB104K50
C 370		CKSRYB105K10
C 371		CKSRYB105K10
C 372		CCSRCH470J50
C 373		CCSRCH220J50
C 374		CCSRCH220J50
C 375		CKSRYB105K10
C 400		CKSQYB475K6R3
C 401		CKSQYB475K6R3
C 402		CKSQYB475K6R3
C 403		CKSRYB105K10
C 404		CKSRYB105K10
C 405		CKSRYB224K16
C 406	2.2 uF/50 V	CZC2971
C 407		CKSQYB225K10
C 410		CKSRYB474K10
C 411		CEAT101M16
C 412		CKSRYB104K50
C 413	(UC)	CKSRYB104K50
C 414	10 uF/16 V	CZC2660
C 415	10 uF/16 V	CZC2660
C 420		CKSQYB475K6R3
C 421		CKSQYB475K6R3
C 422		CKSQYB475K6R3
C 423		CKSRYB105K10
C 424		CKSRYB105K10
C 425		CKSRYB224K16
C 426	2.2 uF/50 V	CZC2971
C 427		CKSQYB225K10
C 431	(EW5)	CEJQ220M16
C 432	(EW5) 10 uF/16 V	CZC2660
C 433	(EW5)	CKSRYB474K10

Circuit Symbol and No.		Part No.
C 434	(EW5)	CCSRCH470J50
C 441		CKSRYB103K50
C 442		CKSRYB104K50
C 443		CEAT101M16
C 444	10 uF/16 V	CZC2660
C 450	10 uF/16 V	CZC2660
C 451	10 uF/16 V	CZC2660
C 460	10 uF/16 V	CZC2660
C 461	10 uF/16 V	CZC2660
C 470	10 uF/16 V	CZC2660
C 471	10 uF/16 V	CZC2660
C 490		CEJQ220M16
C 510	(UC)	CKSRYB104K50
C 511		CKSRYB473K50
C 512		CKSRYB102K50
C 560		CKSRYB474K10
C 561		CKSRYB474K10
C 562		CKSQYB474K25
C 563		CKSQYB474K25
C 570		CKSRYB474K10
C 571		CKSRYB474K10
C 572		CKSQYB474K25
C 573		CKSQYB474K25
C 580	10 uF/16 V	CZC2660
C 582		CKSQYB225K10
C 583		CKSQYB225K10
C 600	3 300 uF/16 V	CCH1177
C 601		CKSRYB104K50
C 610		CKSRYB104K50
C 611		CKSQYB105K16
C 620		CKSQYB105K16
C 621		CKSRYB473K50
C 630		CKSRYB104K50
C 631		CKSRYB102K50
C 650	2 200 uF/16 V	CZC2968
C 651		CKSRYB103K50
C 652		CKSRYB103K50
C 653		CEAT470M16
C 660		CEJQ101M16
C 661		CEJQ101M16
C 662		CKSRYB103K50
C 670		CEJQ101M16
C 671		CEJQ101M16
C 672		CKSRYB103K50
C 673		CEJQ101M16
C 674	10 uF/16 V	CZC2660
C 676		CKSRYB103K50
C 677		CKSRYB103K50
C 678		CEJQ220M16
C 680		CKSRYB103K50
C 681		CKSRYB103K50
C 682		CKSRYB104K50
C 683		CKSRYB103K50
C 701		CKSRYB103K50
C 703		CEJQ101M16
C 704		CKSRYB104K50
C 705		CCSRCH331J50
C 706		CKSRYB223K50
C 708		CEAT470M16

Circuit Symbol and No.		Part No.
C 750		CKSRYB104K50
C 751		CKSRYB102K50
C 752		CKSRYB102K50
C 753		CCSRCH101J50
C 754		CCSRCH101J50
C 755		CKSRYB104K50
C 800		CKSRYB103K50
C 801		CKSRYB103K50
C 803		CCSRCH101J50
C 804		CKSRYB103K50
C 805		CKSRYB102K50
C 806		CKSRYB103K50
C 807	(UC)	CKSRYB102K50
C 808		CCSRCH331J50
C 809		CKSRYB102K50
C 810		CKSRYB562K50
C 850		CEAT330M16

A

Unit Number : CZW5571
(FH-P6050UB/XJ/ES)
Unit Name : Comb PWB Unit

MISCELLANEOUS

Circuit Symbol and No.		Part No.
IC 1	IC	PEG438A
IC 35	IC	PST3435UL
IC 130	IC	NJM2885DL1-33
IC 260	IC	NJM2885DL1-33
IC 280	Regulator IC	BD9781HFP
IC 290	IC	R5523N001B
IC 350	IC	BA3131FS
IC 400	IC	PML017A
IC 550	IC	PA2029A
IC 660	IC	NJM2388F84
IC 700	IC	NJM2360M
IC 750	IC	HA12241FP
Q 90	Transistor	UMF23N
Q 250	Transistor	2SD2396
Q 251	Transistor	UMD2N
Q 440	Transistor	2SD1767
Q 441	Transistor	UMD2N
Q 450	Transistor	IMH23
Q 460	Transistor	IMH23
Q 490	Transistor	UMD2N
Q 610	Transistor	RT3CLLM
Q 620	Chip Transistor	DTC114EUA
Q 630	Transistor	2SB1218A
Q 650	Transistor	2SD2396
Q 651	Transistor	UMD2N
Q 680	Transistor	2SD1767
Q 681	Transistor	UMD2N
Q 682	Chip Transistor	DTC114EUA
Q 700	Transistor	2SD1760F5
Q 701	Transistor	UMD2N
Q 750	Transistor	UMF23N
Q 850	Chip Transistor	DTC114EUA
Q 851	Chip Transistor	DTC124EUA
Q 852	Transistor	2SD1819A
D 35	Diode	MA2J11100L
D 80	Diode	HZM6R8ZMWA
D 81	Diode	HZM6R8ZMWA
D 82	Diode	HZM6R8ZMWA
D 83	Diode	HZM6R8ZMWA
D 100	Diode	1A4
D 101	Diode	1A4
D 160	Diode	HZM6R8ZMWA
D 161	Diode	HZM6R8ZMWA
D 250	Diode	HZS7L(C3)
D 280	Diode	1A4
D 281	Diode	SM240A
D 290	Diode	HZM6R8ZMWA
D 291	Diode	HZM6R8ZMWA
D 440	Diode	HZS12L(B1)
D 490	Diode	1SS133
D 510	Diode	1A4
D 511	Diode	1A4
D 600	Diode	1A4
D 601	Diode	1A4
D 610	Diode	HZS7L(C3)
D 611	Diode	HZS7L(A1)
D 620	Diode	1SS133
D 630	Diode	MA3J142E0L
D 650	Diode	1A4
D 651	Diode	HZS6L(B1)
D 680	Diode	HZS12L(A2)
D 681	Diode	HZS9L(C3)
D 700	Diode	HZS11L(A1)
D 701	Diode	RB551V-30
D 850	Diode	MA3J142E0L
D 851	Diode	HZU8R2(B3)
L 1	Inductor	CTF1379
L 2	Inductor	CTF1379
L 3	Chip Coil	CTZ2931
L 90	Chip Coil	LCTAW100J2520
L 101	Coil	CZT2937
L 102	Chip Coil	CTZ2931
L 103	Chip Coil	CTZ2931
L 104	Chip Coil	LCTAW4R7J2520
L 105	Inductor	LCTAW2R2J2520
L 200	Inductor	CTF1379
L 280	Inductor	CTH1385
L 410	Chip Coil	CTZ2931
L 600	Coil	CZT2936
L 630	Inductor	LAU2R2J
L 700	Inductor	CTF1660
L 701	Chip Coil	CTZ2931
L 750	Inductor	CTF1379
T 290	Inductor	CTF1713
X 1	Crystal Resonator 20 MHz	CZS2926
⚠FU450	Fuse 3 A	CEK1286
KN80	Jack	CZK2969
⚠	Fuse 10 A	CEK1208
U 100	FM/AM Tuner Unit	CWE2098
KN100	Jack	CZK2969
P 100	Surge Protector	IMSA-6802-01Y900
BZ1	Buzzer	CPV1062

RESISTORS

Circuit Symbol and No.	Part No.
R 2	RS1/16S104J
R 3	RS1/16S104J
R 5	RS1/16S473J
R 7	RS1/16S103J
R 8	RS1/16S473J
R 9	RS1/16S0R0J
R 11	RS1/16S103J
R 12	RS1/16S104J
R 16	RS1/16S471J
R 17	RS1/16S473J
R 18	RS1/16S222J
R 19	RS1/16S102J
R 20	RS1/16S104J
R 22	RS1/16S472J
R 23	RS1/16S472J
R 24	RS1/16S104J
R 25	RS1/16S473J
R 27	RS1/16S103J
R 30	RAB4C681J
R 31	RS1/16S102J
R 35	RS1/16S473J
R 36	RS1/16S102J
R 40	RS1/16S473J
R 80	RS1/16S102J
R 83	RS1/16S102J
R 84	RS1/16S102J
R 85	RS1/16S102J
R 86	RS1/16S102J
R 87	RS1/16S1R0J
R 88	RS1/16S0R0J
R 89	RS1/16S0R0J
R 90	RS1/16S473J
R 91	RS1/16S102J
R 101	RAB4C681J
R 102	RAB4C681J
R 160	RS1/16S101J
R 161	RS1/16S101J
R 162	RS1/16S223J
R 163	RS1/16S223J
R 200	RS1/16S473J
R 201	RS1/16S104J
R 202	RS1/16S221J
R 203	RS1/16S102J
R 204	RAB4C682J
R 205	RAB4C221J
R 250	RD1/4PU102J
R 280	RS1/16S104J
R 281	RS1/16S0R0J
R 282	RS1/16S683J
R 284	RS1/16S471J
R 285	RS1/16S333J
R 286	RS1/16S3302F
R 287	RS1/16S8201F
R 350	RS1/16S473J
R 353	RS1/16S473J
R 356	RS1/16S473J
R 357	RS1/16S473J
R 362	RS1/16S102J
R 364	RS1/16S102J
R 370	RS1/16S473J

Circuit Symbol and No.	Part No.
R 373	RS1/16S473J
R 376	RS1/16S473J
R 377	RS1/16S473J
R 411	RAB4C102J
R 430	RS1/16S104J
R 431	RS1/16S104J
R 440	RS1/16S561J
R 441	RS1/16S110J
R 450	RS1/16S390J
R 451	RS1/16S390J
R 452	RS1/16S223J
R 453	RS1/16S223J
R 460	RS1/16S390J
R 461	RS1/16S390J
R 462	RS1/16S223J
R 463	RS1/16S223J
R 481	RS1/16S0R0J
R 483	RS1/16S0R0J
R 490	RK1/16S820J
R 491	RS1/16S102J
R 550	RS1/16S472J
R 551	RS1/16S472J
R 560	RS1/16S182J
R 561	RS1/16S182J
R 562	RS1/16S272J
R 563	RS1/16S272J
R 570	RS1/16S182J
R 571	RS1/16S182J
R 572	RS1/16S272J
R 573	RS1/16S272J
R 580	RS1/16S153J
R 582	RS1/16S0R0J
R 610	RS1/16S473J
R 611	RS1/16S104J
R 612	RD1/4PU102J
R 613	RS1/16S472J
R 614	RS1/16S473J
R 615	RS1/16S103J
R 620	RD1/4PU102J
R 621	RS1/16S103J
R 630	RD1/4PU153J
R 632	RS1/16S473J
R 633	RS1/16S102J
R 650	RS1/16S222J
R 651	RS1/16S223J
R 660	RS1/16S473J
R 680	RD1/4PU102J
R 681	RS1/16S110J
R 682	RS1/16S472J
R 683	RS1/16S472J
R 700	RD1/4PU681J
R 701	RS1/16S1R0J
R 702	RS1/16S821J
R 703	RS1/16S391J
R 704	RS1/16S122J
R 705	RD1/4PU332J
R 707	RS1/16S2R2J
R 708	RS1/16S1R0J
R 750	RS1/16S101J
R 751	RS1/16S472J

Circuit Symbol and No.		Part No.
R 752		RS1/16S102J
R 753		RS1/16S102J
R 754		RS1/16S102J
R 755		RS1/16S223J
R 756		RS1/16S223J
R 757		RS1/16S181J
R 758		RS1/16S222J
R 759		RS1/16S181J
R 760		RS1/16S101J
R 761		RS1/16S101J
R 762		RS1/16S620J
R 763		RS1/16S332J
R 764		RS1/16S562J
R 850		RS1/16S101J
R 851		RS1/16S331J
R 852		RS1/16S103J
R 853		RS1/16S103J
R 854		RS1/16S472J
R 855		RS1/16S104J
R 856		RS1/16S473J
R 857		RS1/16S473J

CAPACITORS

Circuit Symbol and No.		Part No.
C 1	10 uF/16 V	CZC2660
C 2		CKSRYB104K50
C 3		CKSRYB103K50
C 4		CKSRYB104K50
C 6		CKSRYB104K50
C 7		CCSRCH150J50
C 8		CCSRCH150J50
C 9		CKSRYB103K50
C 10		CCSRCH470J50
C 11		CKSQYB475K6R3
C 12		CCSRCH101J50
C 13		CCSRCH101J50
C 15		CKSRYB562K50
C 35		CKSQYB225K10
C 40		CKSRYB104K50
C 81		CKSRYB102K50
C 100		CKSRYB104K50
C 101		CEJQ101M16
C 109		CKSRYB102K50
C 130	10 uF/16 V	CZC2660
C 131		CKSRYB103K50
C 132		CKSRYB103K50
C 133		CEJQ220M16
C 162		CKSRYB103K50
C 200		CKSRYB102K50
C 201		CKSRYB103K50
C 206		CCSRCH101J50
C 250		CKSRYB103K50
C 251		CKSRYB102K50
C 252		CEJQ101M16
C 260		CKSRYB474K10
C 261		CEJQ220M16
C 262		CKSRYB103K50
C 280		CEJQ101M16
C 281		CKSQYB105K16
C 282	150 uF/6.3 V	CZC2970
C 283		CKSRYB104K50
C 284		CKSRYB103K50
C 286		CCSRCH221J50
C 287		CCSRCH221J50
C 290		CKSRYB104K50
C 291		CKSRYB104K50
C 350		CKSRYB105K10
C 353		CCSRCH220J50
C 354		CCSRCH220J50
C 355		CKSRYB105K10
C 360		CKSRYB103K50
C 361	10 uF/16 V	CZC2660
C 362		CEJQ220M16
C 363		CEJQ101M16
C 370		CKSRYB105K10
C 373		CCSRCH220J50
C 374		CCSRCH220J50
C 375		CKSRYB105K10
C 400		CKSQYB475K6R3
C 401		CKSQYB475K6R3
C 402		CKSQYB475K6R3
C 403		CKSRYB105K10
C 404		CKSRYB105K10
C 405		CKSRYB224K16
C 406	2.2 uF/50 V	CZC2971
C 407		CKSQYB225K10
C 410		CKSRYB474K10
C 411		CEAT101M16
C 412		CKSRYB104K50
C 413		CKSRYB104K50
C 414	10 uF/16 V	CZC2660
C 415	10 uF/16 V	CZC2660
C 420		CKSQYB475K6R3
C 421		CKSQYB475K6R3
C 422		CKSQYB475K6R3
C 423		CKSRYB105K10
C 424		CKSRYB105K10
C 425		CKSRYB224K16
C 426	2.2 uF/50 V	CZC2971
C 427		CKSQYB225K10
C 441		CKSRYB103K50
C 442		CKSRYB104K50
C 443		CEAT101M16
C 444	10 uF/16 V	CZC2660
C 450	10 uF/16 V	CZC2660
C 451	10 uF/16 V	CZC2660
C 460	10 uF/16 V	CZC2660
C 461	10 uF/16 V	CZC2660
C 490		CEJQ220M16
C 511		CKSRYB473K50
C 512		CKSRYB102K50
C 560		CKSRYB474K10
C 561		CKSRYB474K10
C 562		CKSQYB474K25
C 563		CKSQYB474K25
C 570		CKSRYB474K10
C 571		CKSRYB474K10
C 572		CKSQYB474K25
C 573		CKSQYB474K25

Circuit Symbol and No.		Part No.
C 580	10 uF/16 V	CZC2660
C 582		CKSQYB225K10
C 583		CKSQYB225K10
C 600	3 300 uF/16 V	CCH1177
C 601		CKSRYB104K50
C 610		CKSRYB104K50
C 611		CKSQYB105K16
C 620		CKSQYB105K16
C 621		CKSRYB473K50
C 630		CKSRYB104K50
C 631		CKSRYB102K50
C 650	2 200 uF/16 V	CZC2969
C 651		CKSRYB103K50
C 652		CKSRYB103K50
C 653		CEAT470M16
C 660		CEJQ101M16
C 661		CEJQ101M16
C 662		CKSRYB103K50
C 680		CKSRYB103K50
C 681		CKSRYB103K50
C 682		CKSRYB104K50
C 683		CKSRYB103K50
C 701		CKSRYB103K50
C 703		CEJQ101M16
C 704		CKSRYB104K50
C 705		CCSRCH331J50
C 706		CKSRYB223K50
C 708		CEAT470M16
C 750		CKSRYB104K50
C 751		CKSRYB102K50
C 752		CKSRYB102K50
C 753		CCSRCH101J50
C 754		CCSRCH101J50
C 755		CKSRYB104K50
C 800		CKSRYB103K50
C 803		CCSRCH101J50
C 850		CEAT330M16

B

Unit Number : CZW5574(UC)
Unit Number : CZW5573(EW5)
Unit Number : CZW5575(ES)
Unit Name : Keyboard Unit

MISCELLANEOUS

Circuit Symbol and No.		Part No.
IC 901	Remote IC	GP1UX51RK
IC 902	IC	PEG439A
Q 901	Transistor(UC,EW5)	UMD3N
Q 902	Transistor(UC,EW5)	UMD3N
Q 903	Transistor(UC,ES)	UMD3N
Q 904	Chip Transistor(UC,EW5)	DTC114EUA
Q 905	Chip Transistor	DTC114EUA
Q 906	Chip Transistor(UC,ES)	DTC114EUA
Q 909	Chip Transistor	DTC114EUA
Q 910	Transistor	2SD1819A
D 901	LED	NECBB205T
D 902	LED	NECBB205T
D 903	LED	NECBB205T
D 904	LED	NECBB205T
D 907	LED	NECBB205T
D 908	LED	NECBB205T
D 909	LED(UC,EW5)	NECBB205T
D 910	LED(UC,EW5)	NECBB205T
D 911	LED	NECBB205T
D 912	LED	NECBB205T
D 913	LED	NECBB205T
D 914	LED	NECBB205T
D 915	LED	NECBB205T
D 916	LED	NECBB205T
D 917	LED	NECBB205T
D 918	LED	NECBB205T
D 919	LED	NECBB205T
D 922	Diode	1SS355
L 901	Chip Coil	CZT2933
X 901	Oscillator 10.0 MHz	CSS1577
S 901	Switch	CZS2924
S 902	Switch	CZS2924
S 903	Switch	CZS2924
S 904	Switch	CZS2924
S 905	Switch	CZS2924
S 906	Switch	CZS2924
S 907	Switch	CZS2924
S 908	Switch(MULTI-CONTROL)	CSX1116
S 909	Switch	CZS2924
S 910	Switch	CZS2924
S 911	Switch	CZS2924
S 912	Switch	CZS2924

RESISTORS

Circuit Symbol and No.		Part No.
R 902	(UC,EW5)	RS1/10S102J
R 903	(UC,EW5)	RS1/10S102J
R 904		RS1/10S102J
R 905		RS1/16S681J
R 907		RS1/16S681J
R 909		RS1/16S681J
R 911	(UC,EW5)	RS1/16S101J
R 912	(UC,EW5)	RS1/16S101J
R 913	(UC,ES)	RS1/16S101J
R 913	(EW5)	RS1/16S681J
R 914		RS1/16S681J
R 916	(UC,EW5)	RS1/16S241J
R 917	(UC,EW5)	RS1/16S241J
R 918	(UC,ES)	RS1/16S241J
R 918	(EW5)	RS1/16S681J
R 919	(UC,EW5)	RS1/16S241J
R 920	(UC,EW5)	RS1/16S241J
R 921	(UC,ES)	RS1/16S241J
R 922		RS1/16S681J
R 926		RS1/16S103J
R 927		RS1/16S681J
R 929		RS1/16S681J
R 930	(EW5)	RS1/16S0R0J
R 931		RS1/16S333J
R 932		RS1/16S333J
R 934		RS1/16S473J
R 935		RS1/16S822J
R 937		RS1/16S822J
R 938		RS1/16S822J

Circuit Symbol and No.	Part No.
R 939	RS1/16S101J
R 940	RS1/16S103J
R 941	RS1/16S332J
R 942	RS1/16S332J
R 943	RS1/16S332J
R 944	RS1/16S2R2J
R 945	RS1/16S222J
R 946	RS1/16S222J
R 949	RS1/16S222J
R 951	RS1/16S103J
R 954	RS1/16S103J
R 955	RS1/16S3902F
R 956	RS1/16S8202F
R 957	RS1/16S392J
R 959	RS1/16S0R0J
R 960	RS1/16S103J
R 962	RS1/16S4702D
R 963	RS1/16S473J
R 964	RS1/16S102J
R 965	RS1/16S101J
R 966	RS1/16S473J
R 967	RS1/16S102J
R 968	RS1/16S473J
R 969	RS1/16S154J
R 970	RS1/16S101J
R 971	RS1/16S101J
R 972	RS1/16S101J
R 982	RAB4C103J
R 983	RAB4C103J
R 984	RS1/10S102J
R 985	RS1/10S102J
R 986	RS1/10S102J
R 987	RS1/10S102J
R 988	RS1/16S472J
R 989	RS1/16S472J

CAPACITORS

Circuit Symbol and No.		Part No.
C 901	0.1 uF	CZC2645
C 902	0.1 uF	CZC2645
C 903	0.1 uF	CZC2645
C 904	0.1 uF	CZC2645
C 906		CKSRYB103K50
C 907	0.1 uF	CZC2645
C 908	0.1 uF	CZC2645
C 909	(UC,EW5) 0.1 uF	CZC2645
C 910	(UC,EW5) 0.1 uF	CZC2645
C 911	0.1 uF	CZC2645
C 912	0.1 uF	CZC2645
C 913	0.1 uF	CZC2645
C 914	0.1 uF	CZC2645
C 915	0.1 uF	CZC2645
C 916	0.1 uF	CZC2645
C 917	0.1 uF	CZC2645
C 918	0.1 uF	CZC2645
C 919	0.1 uF	CZC2645
C 921		CKSYF106Z16
C 922		CKSRYB104K50
C 923		CKSRYB104K50
C 924		CKSRYB224K16
C 925		CKSRYB103K50
C 926		CKSRYB105K10
C 927		CKSRYB104K50
C 930		CCSRCH220J50
C 931		CKSRYB103K50
C 932		CKSRYB103K50

D

Unit Number : CWN3394(UC,EW5)
Unit Name : Bluetooth Unit

MISCELLANEOUS

Circuit Symbol and No.		Part No.
IC 21	IC	TC74VHC02FTS1
IC 22	IC	TC7PAU04FU
IC 23	IC	TC7PAU04FU
IC 36	IC	AK2301A
IC 51	IC	AN6123MS
IC 56	IC	PCM1742KE
IC 66	IC	NJM4558V
Q 1	Chip Transistor	DTC124EUA
Q 2	Chip Transistor	DTC124EUA
Q 21	Transistor	UMD2N
Q 22	Chip Transistor	DTC124EUA
Q 23	Transistor	UMD2N
Q 36	Chip Transistor	DTC124EUA
Q 37	Chip Transistor	DTC124EUA
L 1	Inductor	CTF1394
L 21	Inductor	CTF1379
L 22	Inductor	CTF1379
L 23	Inductor	CTF1379
L 36	Inductor	LCYC2R2K1608
L 51	Inductor	CTF1379
L 56	Inductor	CTF1379
L 57	Inductor	CTF1379
X 21	Oscillator 11.289 6 MHz	CSS1670
X 22	Oscillator 12.288 MHz	CSS1698

RESISTORS

Circuit Symbol and No.	Part No.
R 1	RS1/16S334J
R 2	RS1/16S103J
R 3	RS1/16S473J
R 4	RS1/16S103J
R 5	RS1/16S103J
R 7	RS1/16S103J
R 8	RS1/16S101J
R 9	RS1/16S103J
R 21	RS1/16S101J
R 22	RS1/16S473J
R 23	RS1/16S473J
R 24	RS1/16S101J
R 25	RS1/16S101J
R 26	RS1/16S332J
R 27	RS1/16S105J
R 28	RS1/16S332J
R 29	RS1/16S105J
R 36	RS1/16S103J
R 37	RS1/16S104J
R 41	RS1/16S103J
R 43	RS1/16S393J

Circuit Symbol and No.	Part No.
R 44	RS1/16S393J
R 45	RAB4C101J
R 46	RS1/16S103J
R 47	RS1/16S203J
R 48	RS1/16S103J
R 49	RS1/16S203J
R 50	RS1/16S473J
R 51	RS1/16S105J
R 52	RS1/16S103J
R 57	RAB4C101J
R 58	RS1/16S821J
R 66	RS1/16S103J
R 67	RS1/16S103J
R 68	RS1/16S473J
R 69	RS1/16S103J
R 70	RS1/16S103J
R 71	RS1/16S473J
R 72	RS1/16S103J
R 73	RS1/16S103J
R 76	RS1/16S101J
R 77	RS1/16S101J
R 78	RS1/16S101J
R 79	RS1/16S0R0J
R 80	RS1/16S101J
R 81	RS1/16S101J
R 82	RS1/16S101J
R 83	RS1/16S101J
R 84	RS1/16S0R0J
R 85	RS1/16S101J
R 86	RAB4C101J
R 87	RAB4C101J

CAPACITORS

Circuit Symbol and No.	Part No.
C 1	CKSRYB104K16
C 4	CSZS100M16
C 5	CKSRYB104K16
C 7	CSZS1R0M16
C 8	CKSRYB104K16
C 9	CKSRYB104K16
C 10	CCSRCH101J50
C 21	CKSRYB104K16
C 22	CKSRYB105K10
C 23	CCSRCH120J50
C 24	CCSRCH120J50
C 25	CKSRYB105K10
C 26	CCSRCH120J50
C 27	CCSRCH120J50
C 28	CKSRYB102K50
C 36	CKSYB106K6R3
C 37	CKSRYB104K16
C 38	CKSRYB105K10
C 41	CCSRCH101J50
C 42	CKSRYB105K10
C 43	CKSRYB105K10
C 44	CKSRYB334K10
C 45	CKSRYB105K10
C 46	CCSRCH101J50
C 47	CCSRCH101J50
C 48	CKSRYB105K10
C 49	CKSRYB105K10
C 50	CKSRYB105K10
C 51	CKSRYB334K10
C 52	CCSRCH331J50
C 53	CKSYB106K6R3
C 54	CKSRYB105K10
C 55	CKSRYB104K16
C 56	CKSYB106K6R3
C 57	CKSRYB102K50
C 58	CKSYB106K6R3
C 59	CKSRYB102K50
C 60	CKSYB106K6R3
C 61	CKSRYB102K50
C 66	CKSYB475K16
C 67	CKSYB475K16
C 68	CCSRCH221J50
C 69	CCSRCH391J50
C 70	CKSYB106K6R3
C 71	CKSRYB105K10
C 72	CCSRCH391J50
C 73	CCSRCH221J50
C 76	CKSRYB102K50

C

Unit Number : CWX3624
Unit Name : CD Core Unit(S10.5COMP2-iPod-C2)

MISCELLANEOUS

IC 201	(A,35,46)	IC	PE5647A
IC 205	(B,24,49)	IC	341S2159
IC 301	(A,28,15)	IC	BA5839FP
Q 101	(B,58,69)	Transistor	2SA1577
Q 102	(B,48,58)	Chip Transistor	2SB1689
Q 201	(B,27,54)	Transistor	2SA1577
X 201	(A,22,37)	Ceramic Resonator 16.934 MHz	CSS1603
X 205	(B,33,63)	Oscillator 48.000 MHz	CSS1753
S 901	(A,55,37)	Switch(HOME)	CSN1067
S 903	(B,19,58)	Switch(DSCSNS)	CSN1067
S 904	(B,40,68)	Switch(12EJ)	CSN1068
S 905	(B,25,69)	Switch(8EJ)	CSN1068

RESISTORS

R 101	(B,61,74)	RS1/10SR2R4J
R 102	(B,61,72)	RS1/10SR2R4J
R 103	(B,61,71)	RS1/10SR2R7J
R 104	(B,53,66)	RS1/16SS222J
R 105	(B,44,57)	RS1/16SS102J
R 107	(B,52,60)	RS1/16SS105J
R 202	(A,27,32)	RS1/16SS473J
R 203	(A,51,44)	RS1/16S473J
R 204	(A,23,58)	RS1/16SS221J
R 206	(B,10,26)	RS1/16SS104J
R 209	(B,18,52)	RS1/16SS103J
R 210	(B,10,23)	RS1/16SS102J
R 214	(B,49,50)	RS1/16SS472J
R 216	(B,48,49)	RS1/16SS472J
R 221	(A,51,48)	RS1/16SS103J

Circuit Symbol and No.		Part No.
R 222	(A,51,46)	RS1/16SS103J
R 223	(B,13,43)	RS1/16SS473J
R 225	(A,50,50)	RS1/16SS103J
R 226	(A,50,51)	RS1/16SS393J
R 227	(B,47,51)	RS1/16SS562J
R 228	(B,44,51)	RS1/16SS122J
R 229	(B,46,53)	RS1/16SS472J
R 230	(B,21,25)	RS1/16SS0R0J
R 232	(B,45,51)	RS1/16SS122J
R 233	(B,26,59)	RS1/16SS103J
R 234	(B,22,26)	RS1/16SS473J
R 235	(A,26,59)	RS1/16SS473J
R 237	(A,24,35)	RS1/16SS151J
R 240	(B,14,26)	RS1/16S473J
R 241	(B,13,25)	RS1/16SS103J
R 244	(B,22,55)	RS1/16SS473J
R 249	(B,14,50)	RS1/16SS103J
R 250	(B,19,50)	RS1/16SS101J
R 252	(B,18,47)	RS1/16SS101J
R 254	(A,25,64)	RS1/16SS104J
R 255	(A,26,63)	RS1/16SS104J
R 256	(A,25,62)	RS1/16SS104J
R 259	(A,27,66)	RS1/16SS0R0J
R 261	(A,26,65)	RS1/16SS104J
R 262	(A,29,59)	RS1/16SS0R0J
R 263	(A,27,63)	RS1/16SS0R0J
R 273	(B,18,48)	RS1/16SS103J
R 277	(B,18,50)	RS1/16SS103J
R 282	(A,30,61)	RS1/16SS240J
R 283	(A,29,61)	RS1/16SS240J
R 284	(B,29,63)	RS1/16SS153J
R 285	(B,28,63)	RS1/16SS153J
R 291	(B,42,62)	RS1/16SS272J
R 292	(B,24,43)	RS1/16SS272J
R 293	(B,27,52)	RS1/16SS472J
R 294	(A,31,62)	RS1/16SS471J
R 307	(A,35,19)	RS1/16SS183J
R 308	(A,37,19)	RS1/16SS183J
R 309	(A,35,21)	RS1/16SS183J
R 310	(A,37,22)	RS1/16SS183J
R 601	(B,30,31)	RS1/16SS0R0J
R 602	(B,27,31)	RS1/16SS0R0J
R 606	(B,28,23)	RS1/16S0R0J
R 701	(B,11,37)	RS1/16SS221J
R 702	(A,23,56)	RS1/16SS221J
R 708	(B,15,37)	RS1/16S0R0J
R 712	(B,14,54)	RS1/16SS0R0J
R 713	(B,14,53)	RS1/16SS0R0J

CAPACITORS

Circuit Symbol and No.		Part No.
C 106	(B,56,67)	CKSQYB475K6R3
C 202	(A,28,57)	CKSSYB104K10
C 204	(A,23,59)	CKSSYB103K16
C 205	(B,27,41)	CKSQYB475K6R3
C 206	(A,23,40)	CKSSYB104K10
C 207	(A,24,37)	CKSRYB104K16
C 209	(B,35,34)	CEVW220M6R3
C 210	(B,29,37)	CKSSYB104K10
C 211	(A,28,35)	CKSSYB104K10
C 212	(A,28,30)	CKSRYB104K16
C 213	(A,46,39)	CKSSYB104K10
C 214	(A,29,33)	CKSSYB104K10
C 216	(A,51,52)	CKSSYB332K50
C 217	(A,48,51)	CKSSYB104K10
C 218	(A,50,52)	CKSSYB473K10
C 219	(A,47,53)	CKSSYB104K10
C 220	(A,48,53)	CKSSYB182K50
C 221	(A,46,54)	CKSSYB104K10
C 222	(B,45,53)	CCSSCH560J50
C 223	(B,47,53)	CCSSCH4R0C50
C 224	(A,44,55)	CKSSYB104K10
C 226	(A,42,59)	CCSSCH680J50
C 227	(A,42,61)	CCSSCH470J50
C 228	(B,41,61)	CKSSYB103K16
C 229	(B,48,60)	CKSSYB104K10
C 236	(A,49,58)	CKSSYB104K10
C 239	(B,46,51)	CCSSCH220J50
C 240	(A,38,61)	CKSSYB104K10
C 243	(B,22,41)	CKSQYB475K6R3
C 250	(A,52,48)	CKSSYB102K50
C 251	(A,52,46)	CKSSYB102K50
C 260	(A,28,61)	CKSSYB104K10
C 261	(B,33,66)	CCSSCH8R0D50
C 262	(B,31,66)	CCSSCH8R0D50
C 290	(B,26,45)	CKSSYB104K10
C 293	(B,43,61)	CKSSYB102K50
C 294	(B,24,41)	CKSSYB104K10
C 303	(A,36,19)	CKSSYB472K25
C 304	(A,36,21)	CKSSYB223K16
C 307	(A,22,11)	CKSRYB104K16
C 308	(B,11,18)	CKSRYB105K10
C 703	(B,14,35)	CCSSCH101J50
C 704	(B,11,36)	CKSSYB102K50
C 711	(A,31,25)	CKSSYB104K10

Miscellaneous Parts List

	Pickup Unit(P10.5)(Service)	CXX1942
M 1	Motor Unit(SPINDLE)	CXC7134
M 2	Motor Unit(LOADING/CARRIAGE)	CXC4026

1. CIRCUIT DESCRIPTIONS

The recent mainstay of the CD LSI is the LSI integrating the core DSP with DAC or RF amplifier, which are generally employed as peripheral circuits, however, PE5611B, used in this product, is an LSI integrating the afore-mentioned LSI unit and microcomputer unit in one chip, with an additional USB host control section.

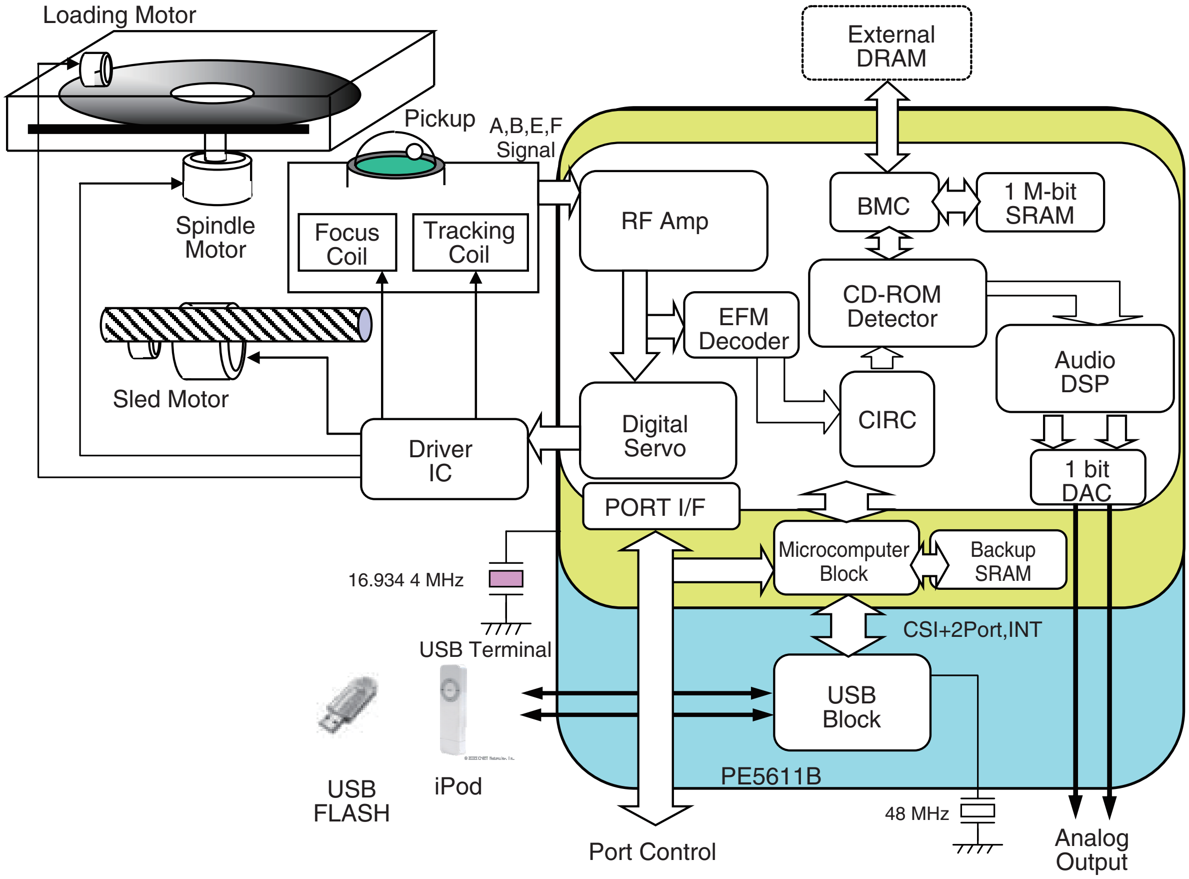

Loading Motor
External DRAM
Pickup
A,B,E,F Signal
Spindle Motor
Focus Coil
Tracking Coil
RF Amp
BMC
1 M-bit SRAM
CD-ROM Detector
EFM Decoder
Audio DSP
Sled Motor
Digital Servo
CIRC
Driver IC
1 bit DAC
PORT I/F
Microcomputer Block
Backup SRAM
16.934 4 MHz
USB Terminal
CSI+2Port,INT
USB Block
USB FLASH
iPod
PE5611B
48 MHz
Port Control
Analog Output

Fig.1.0.1 Block diagram of CD LSI PE5611B

1.1 PREAMPLIFIER BLOCK

In the preamplifier block, the pickup output signals are processed to generate signals that are used in the subsequent blocks: servo, demodulator, and control blocks. Signals from the pickup are I/V converted in the pickup with the preamplifier with built-in photo detectors, and after added with the RF amplifier, they are used to produce such signals as RF, FE, TE, and TE zero-cross signals. The preamplifier block is built in CD LSI PE5611B (IC201), whose parts are described individually below. Incidentally, as this LSI employs a single power supply (+ 3.3 V) specification, the reference voltages of this LSI and the pickup are the REFO (1.65 V) for both. The REFO is an output obtained from REFOUT in the LSI via the buffer amplifier, and is output from the pin 133 of this LSI. All measurements will be performed with this REFO as the reference.

Caution: Be careful not to short-circuit the REFO and GND when measuring.

1.1.1 APC (Automatic Power Control) circuit

Since laser diodes have extremely negative temperature characteristics in optical output when driven in constant current, it is necessary to control the current with the monitor diodes in order to keep the output constant. This is the feature of the APC circuit. The LD current is obtained by measuring the voltage between LD1 and V3R3, and divide the value by 7.5 (ohms), which becomes about 30 mA. The voltage difference between LD and V3R3 will be about 225 mV.

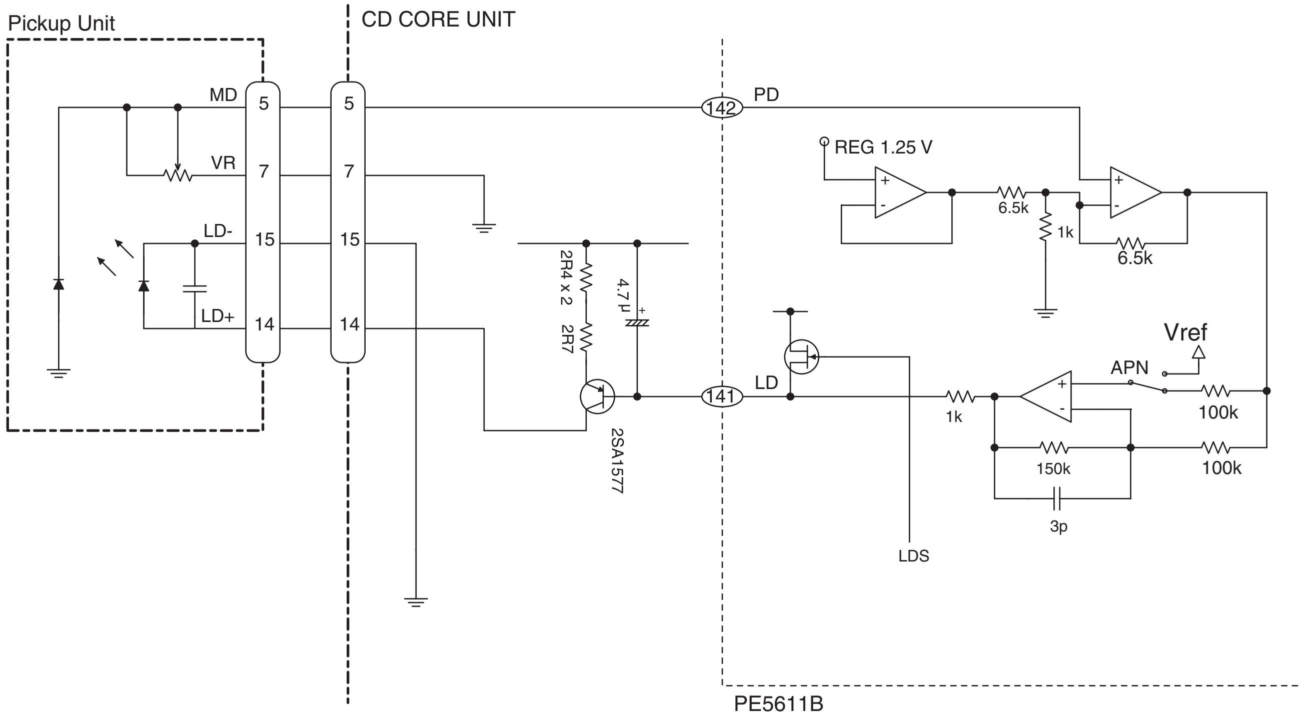


Fig.1.1.1 APC

1.1.2 RF and RFAGC amplifiers

The output from the photo-detector (A + C) and (B + D) is provided from the RFO terminal as the RF signal (which can be used for eye-pattern check), after it is added, amplified, and equalized inside this LSI. The low frequency component of the voltage RFO is calculated as below.

RFO = (A + B + C + D) x 2

The RFO is used for the FOK generation circuit and RF offset adjustment circuit.

The RFO signal, output from the pin 122, is A/C-coupled externally, input to the pin 121, and amplified in the RFAGC amplifier to obtain the RFAGC signal.

Also, this LSI is equipped with the RFAGC auto-adjustment function, explained below, which switches feedback gains of the RFAGC amplifier so that the RFO output will be 1.5 V.

This RFO signal is also used for the EFM, DFCT, MIRR, and RFAGC auto-adjustment circuits.

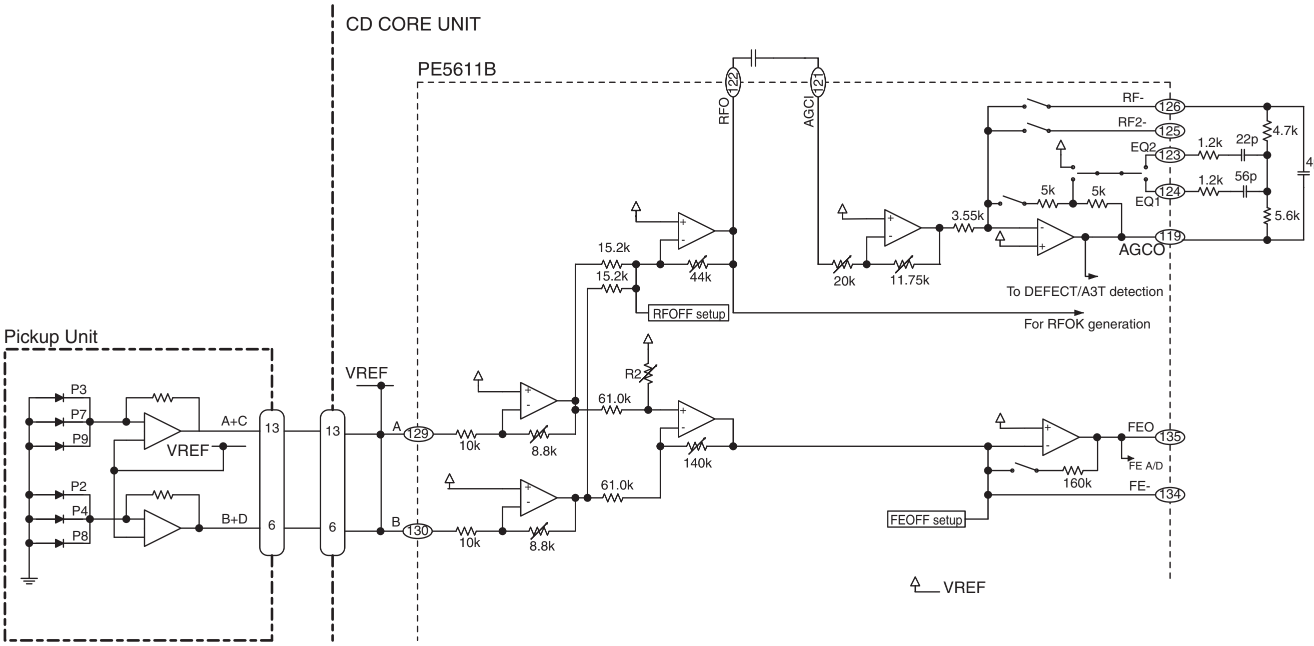

CD CORE UNIT
PE5611B
RFO
122
AGCI
121
RF-
126
RF2-
125
EQ2
123
1.2k
22p
4.7k
4p
EQ1
124
1.2k
56p
5k
5k
3.55k
5.6k
119
AGCO
15.2k
15.2k
44k
20k
11.75k
To DEFECT/A3T detection
RFOFF setup
For RFOK generation
Pickup Unit
P3
P7
P9
P2
P4
P8
A+C
B+D
VREF
13
13
6
6
VREF
A
129
B
130
10k
8.8k
10k
8.8k
R2
61.0k
61.0k
140k
FEO
135
FE A/D
160k
FE-
134
FEOFF setup
VREF

Fig.1.1.2 RF/AGC/FE

1.1.3 Focus error amplifier

The photo-detector outputs (A + C) and (B + D) are passed through the differential amplifier and the error amplifier, and (A + C - B - D) is provided from the pin 135 as the FE signal. The low frequency component of the voltage FE is calculated as below.

FE = (A + C - B - D) x 8.8k / 10k x 111k / 61k x 160k / 72k
= (A + C - B - D) x 3.5

For the FE outputs, an S-shaped curve of 1.5 Vp-p is obtained with the REFO as the reference. The cutoff frequency for the subsequent stage amplifiers is 14.6 kHz.

1.1.4 RFOK circuit

This circuit generates the RFOK signal, which indicates the timing to close the focus loop and focus-close status during the play mode, from the pin 70. As for the signal, "H" is output in closing the focus loop and during the play mode.

Additionally, the RFOK becomes "H" even in a non-pit area, since the DC level of the RFO signal is peak-held in the subsequent digital block and compared at a certain threshold level to generate the RFOK signal. Therefore, the focus is closed even on a mirror-surface area of a disc. This signal is also supplied to the microcomputer via the low-pass filer as the FOK signal, which is used for protection and gain switching of the RF amplifier.

1.1.5 Tracking error amplifier

The photo-detector outputs E and F are passed through the differential amplifier and the error amplifier to obtain (E - F), and then provided from the pin 138 as the TE signal. The low frequency component of the voltage TE is calculated as below.

TEO = (E - F) x 63k / 112k x 160k / 160k x 181k / 45.4k x 160k / 80k
= (E - F) x 4.48

For the TE output, TE waveform of about 1.3 Vp-p with the REFO as the reference. The cutoff frequency in the subsequent is 21.1 kHz.

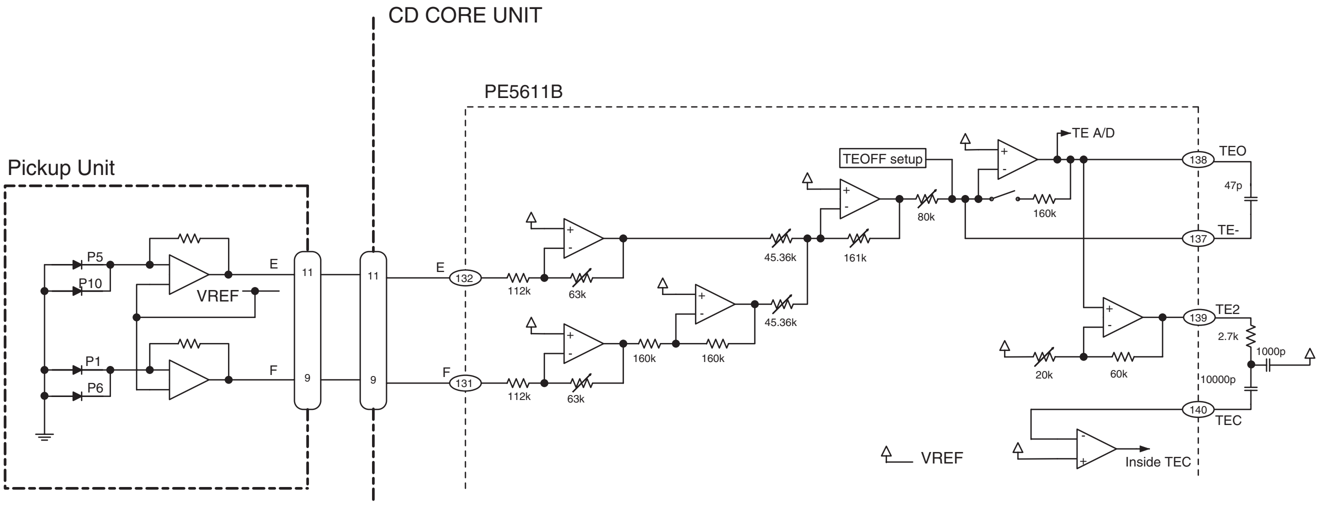

CD CORE UNIT
PE5611B
Pickup Unit
P5
P10
P1
P6
VREF
E
F
11
9
11
9
E
F
132
131
112k
63k
112k
63k
160k
160k
45.36k
45.36k
161k
TEOFF setup
80k
160k
TE A/D
138
TEO
47p
137
TE-
139
TE2
2.7k
1000p
10000p
20k
60k
140
TEC
VREF
Inside TEC

Fig.1.1.3 TE

1.1.6 Tracking zero-cross amplifier

The tracking zero-cross signal (hereinafter referred to as TEC signal) is obtained by amplifying the TE signal by fourfold, and used to detect the tracking-error zero-cross point. As the purpose of detecting the zero-cross point, the following two points can be named:

1. To use for track-counting in the carriage move and track jump modes
2. To use for detecting the direction in which the lens moves in tracking close. (Used in the tracking brake circuit to be explained later.)

The frequency range of the TEC signal is from 300 Hz to 20 kHz, and

TEC voltage = TE level x 4

The TEC level can be calculated at 4.62 V, which, at this level, exceeds the D range of the operational amplifier, and clips the signal, but, because the CD LSI only uses the signal at the zero-cross point, it poses no particular problem.

1.1.7 EFM circuit

The EFM circuit converts the RF signal into digital signals of 0 and 1. The AGCO signal output from the pin 119 is A/C-coupled externally, input to the pin 118, and supplied to the EFM circuit.

Missing RF signal due to scratches and stains on the disc, and asymmetry of the upper and lower parts of the RF, caused by variation in disc production, cannot be entirely eliminated in AC coupling process, the reference voltage ASY of the EFM comparator is controlled, using the probability that 0 and 1 occur at 50%. Thus, the comparator level will always stay around the center of the RFO signal. This reference voltage ASY is generated by passing the EFM comparator output through the low-pass filter. The EFM signal is output from the pin 113.

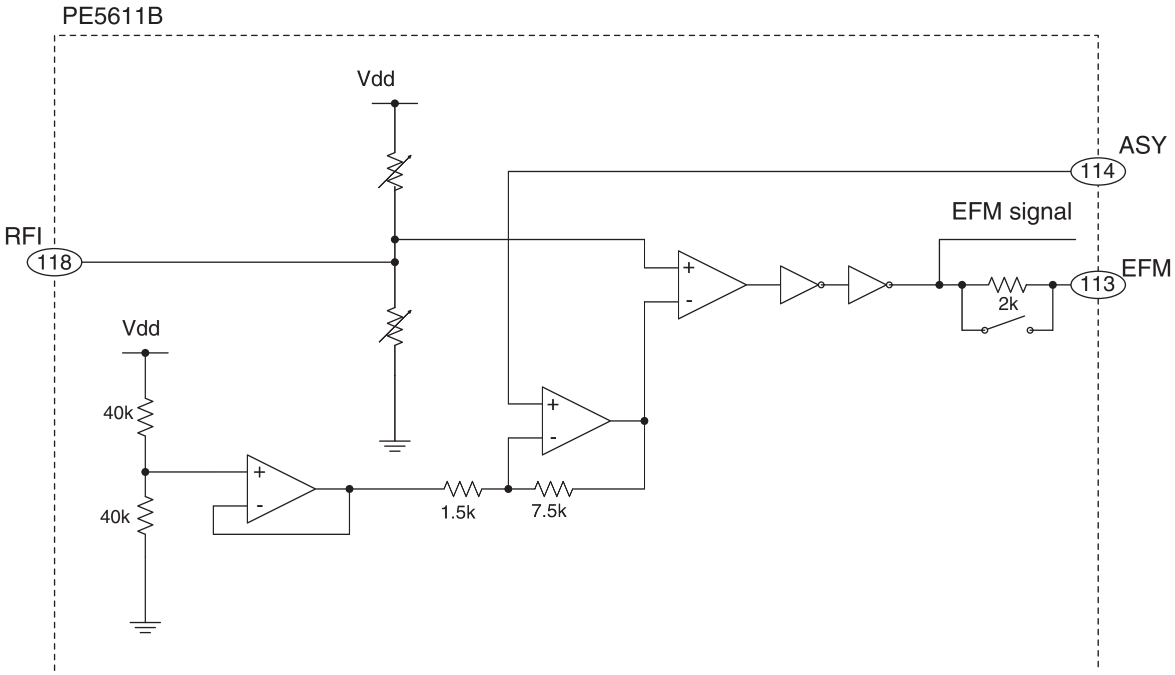


Fig.1.1.4 EFM

1.2 SERVO BLOCK (PE5611B: IC201)

The servo block performs servo control such as error signal equalizing, in-focus, track jump and carriage move. The DSP block is the signal-processing unit, where data decoding, error correction, and compensation are performed. The FE and TE signals, generated in the preamplifier stage, are A/D-converted, and output drive signals for the focus, tracking, and carriage systems via the servo block. Also, the EFM signal is decoded in the signal-processing unit, and ends up in outputting D/A-converted audio signals through the D/A converter. Furthermore, in this decoding process, the spindle servo error signal is generated, supplied to the spindle servo block, and used to output the spindle drive signal.

Each drive signal for focus, tracking, carriage, and spindle servos (FD, TD, SD, and MD) are output as PWM3 data, and then converted to analog data through the LPF. These drive signals, after changed to analog form, can be monitored with the FIN, TIN, CIN, and SIN signals, respectively. Subsequently, the signals are amplified and supplied to the actuator and motor for each signal.

1.2.1 Focus servo system

The main equalizer of the focus servo consists of the digital equalizer block. The figure 1.2.1 shows the block diagram of the focus servo system.

In the focus servo system, it is necessary to move the lens within the in-focus range in order to close the focus loop. For that purpose, the in-focus point is looked for by moving the lens up and down with the focus search voltage of triangular signal. During this time, the rotation of the spindle motor is retained at a certain set speed by kicking the spindle motor.

The servo LSI monitors the FE and RFOK signals and automatically performs the focus-close operations at an appropriate timing. The focus-close operation is performed when the following three conditions are satisfied at the same time:

1) The lens moves toward the disc surface.
2) RFOK = "H"
3) The FE signal is zero-crossed.

Consequently, the FE converges to "0" (= REFO).

When the above-mentioned conditions are met and the focus loop is closed, the FSS bit is shifted from "H" to "L," and then, in 10 ms, the CPU of the LSI starts monitoring the RFOK signal obtained through the low-pass filter.

If the RFOK signal is determined to be "L," the CPU of the LSI takes several actions including protection.

Fig.1.2.2 shows a series of actions concerning the focus close operations. (It shows a case where the focus loop cannot be closed.)

With the focus mode selector displaying 01 in the test mode, pressing the focus close button, allows to check the S-shaped curve, search voltage, and actual lens behavior.

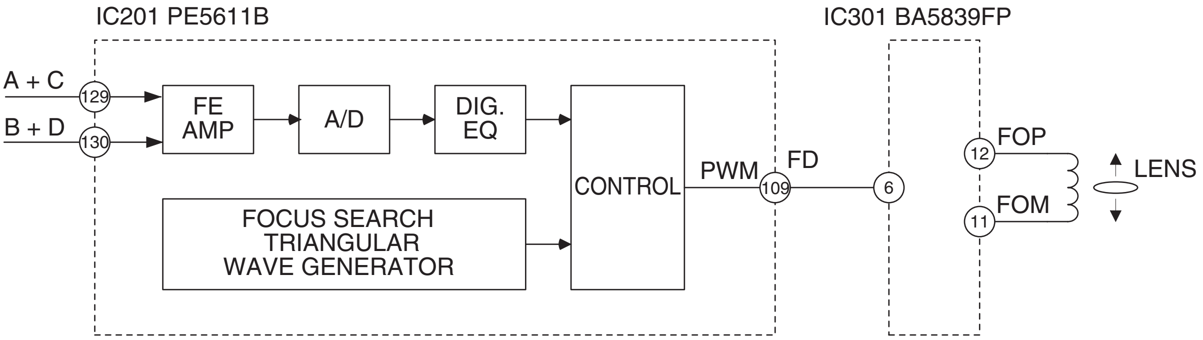


Fig.1.2.1 Block diagram of the focus servo system

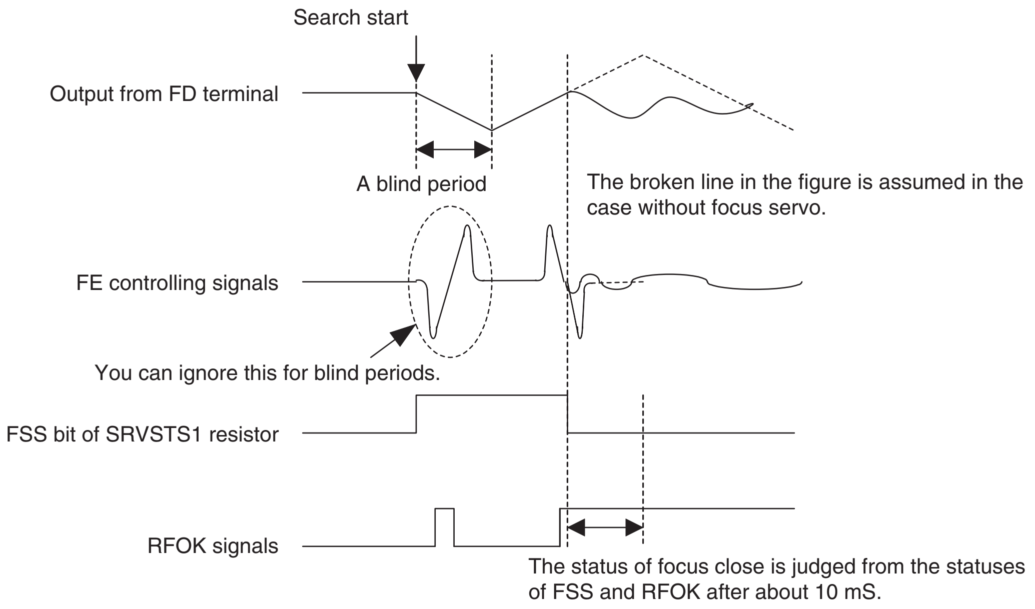


Fig.1.2.2 Timing chart for focus close operations

1.2.2 Tracking servo system

The main equalizer of the tracking servo consists of the digital equalizer block. The figure 1.2.3 shows the block diagram of the tracking servo system.

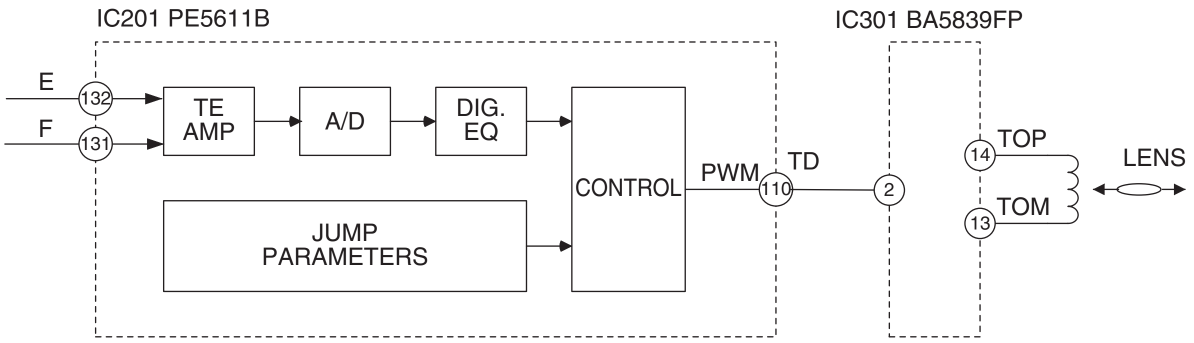

IC201 PE5611B
IC301 BA5839FP
E
F
132
131
TE AMP
A/D
DIG. EQ
CONTROL
JUMP PARAMETERS
PWM
110
TD
2
14
TOP
13
TOM
LENS

Fig.1.2.3 Block diagram of the tracking servo system

(a) The track jump operation is automatically performed by the auto-sequence function inside the LSI with a command from the CPU of the LSI. For the track jumps used in the search mode, a single track jump and four to 100 multi-track jump are available in this system. In the test mode, out of these track jumps, 1, 32, and 32 * 3 track jumps, as well as carriage move can be performed and checked in mode selection. In a track jump, the CPU of the LSI sets about half the number of the total tracks to jump (about five tracks for a 10-track jump), and the set number of tracks are counted using the TEC signal. By outputting the brake pulse for a certain period of time (set by the CPU of the LSI) from the time the set number is counted, and stopping the lens, the tracking loop can be closed so that the normal play can be continued.

Also, in order to facilitate closing of the tracking loop in a track jump, the brake circuit is kept ON for 50 msec, after the brake pulse is stopped, for increasing the tracking servo gain. The FF/REW action in the normal operation mode is realized by performing single jumps consecutively. The speed is approximately 10 times faster than in the normal mode.

(b) Brake circuit

Since the servo loop is not closed very well in the setup mode and track jump mode, the brake circuit is used for stabilizing the servo-loop close operation. The brake circuit detects the direction in which the lens moves, and outputs only the drive signal for the direction opposite to the movement to slow down the lens, thereby stabilizing the tracking servo-loop close operation. Additionally, the off-track direction is determined from the TEC and MIRR signals, as well as their phase relation.

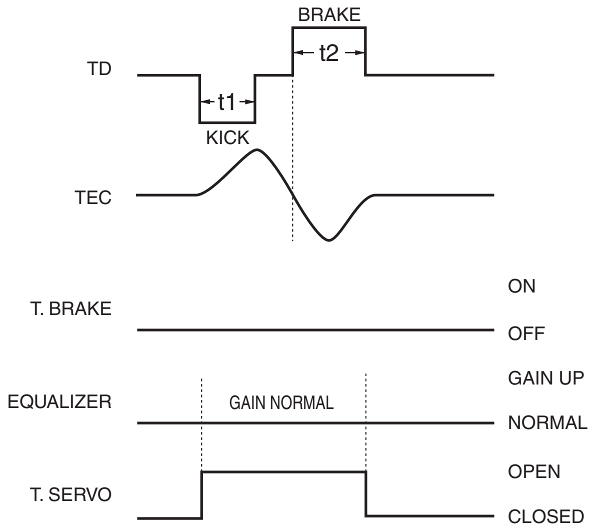


Fig.1.2.4 Single-track jump

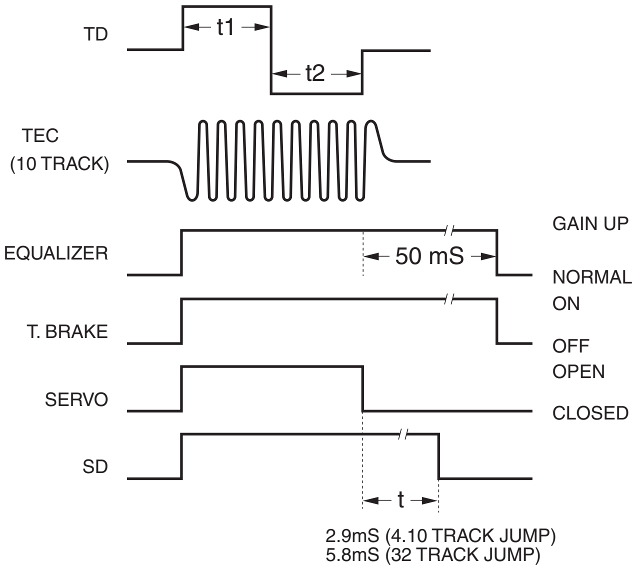
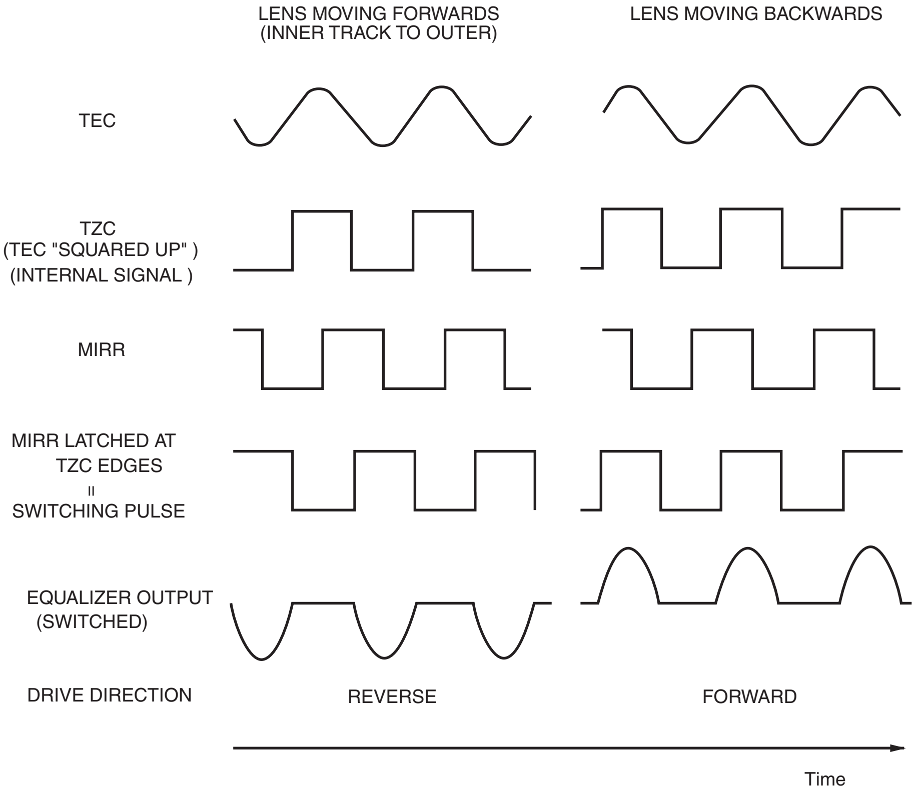

TD
t1
t2
TEC
(10 TRACK)
EQUALIZER
50 mS
GAIN UP
NORMAL
T. BRAKE
ON
OFF
SERVO
OPEN
CLOSED
SD
t
2.9mS (4.10 TRACK JUMP)
5.8mS (32 TRACK JUMP)

Fig.1.2.5 Multi-track jump


LENS MOVING FORWARDS
(INNER TRACK TO OUTER)
LENS MOVING BACKWARDS
TEC
TZC
(TEC "SQUARED UP")
(INTERNAL SIGNAL)
MIRR
MIRR LATCHED AT
TZC EDGES
II
SWITCHING PULSE
EQUALIZER OUTPUT
(SWITCHED)
DRIVE DIRECTION
REVERSE
FORWARD
Time

Note : Equalizer output assumed to hava same phase as TEC.

Fig.1.2.6 Track brake

1.2.3 Carriage servo system

The carriage servo system inputs the output of the low frequency component from the tracking equalizer (information on the lens position) to the carriage equalizer, and, after the gain is increased to a certain level, outputs the drive signal from the CD of the LSI. This signal is applied to the carriage motor via the driver IC.

Specifically, since it is necessary to move the whole pickup to the FORWARD direction when the lens offset reaches a certain level during the play mode, the equalizer gain is set to output higher voltage than the carriage motor starting voltage at this time. In actual operations, a certain threshold level is preset in the servo LSI for the equalizer output, and only when it exceeds the threshold level, the drive voltage will be output. This can reduce the power consumption. Also, before the whole pickup starts moving, the equalizer output voltage may exceed the threshold level a few times, due to such causes as eccentricity of discs. In this case, the output waveform of the drive voltage from the LSI assumes a pulse-like form.

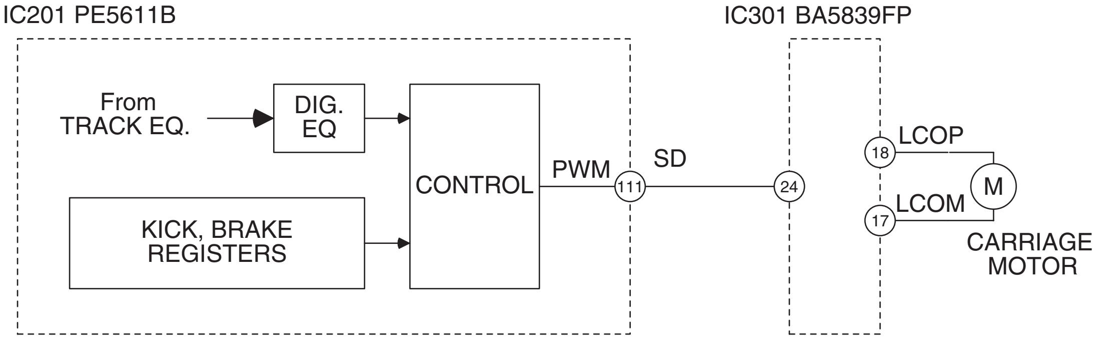


Fig.1.2.7 Block diagram for the carriage servo block

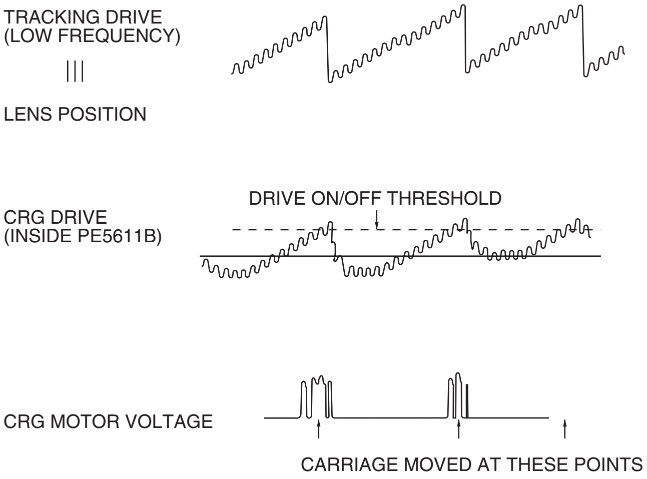


Fig.1.2.8 Waveforms of the carriage signal

1.2.4 Spindle servo system

In the spindle servo system, the following modes are available:

1) Kick

Used to accelerate the disc rotation in the setup mode.

2) Offset

a. Used in the setup mode after the kick mode, until the TBAL adjustment is completed.

b. Used during the play mode when the focus loop is unlocked, until it is locked again.

In both cases, the mode is used to keep the disc rotation approximately normal.

3) Applicable servo

CLV servo mode, used in the normal operation.

In the EFM demodulation block, by WFCK/16 sampling whether the frame sync signal and the internal frame counter output are synchronized, a signal is created to show if they are "in-sync" or "non-sync." The status is not recognized as asynchronous until the signal is "non-sync" for eight consecutive times; otherwise it is recognized as synchronous. In the applicable servo mode, the leading-in servo mode is automatically selected in the asynchronous status, and the normal servo mode in the synchronous status.

4) Brake

Used to stop the spindle motor.

In accordance with the CPU of the LSI command, the brake voltage is sent out from the servo LSI. At this time, the EFM waveform is monitored inside the CD of the LSI, and when the longest EFM pattern exceeds a certain interval (or the rotation slows down enough), a flag is set inside the CD of the LSI, and the CPU of the LSI switches off the brake voltage. If a flag is not set within a certain period, the CPU of the LSI shifts the mode from the brake mode to the stop mode, and retains the mode for a certain period of time. If the mode switches to this stop mode in the eject operation, the disc will be ejected after the period of time mentioned above elapses.

5) Stop

Used when the power is turned on and during the eject operation. In the stop mode, the voltage in both ends of the spindle motor is 0 V.

6) Rough servo

Used in carriage feed (carriage move mode such as long search).

By obtaining the linear velocity from the EFM waveform, the "H" or "L" level is input to the spindle equalizer. In the test mode, this mode is also used for grating confirmation.

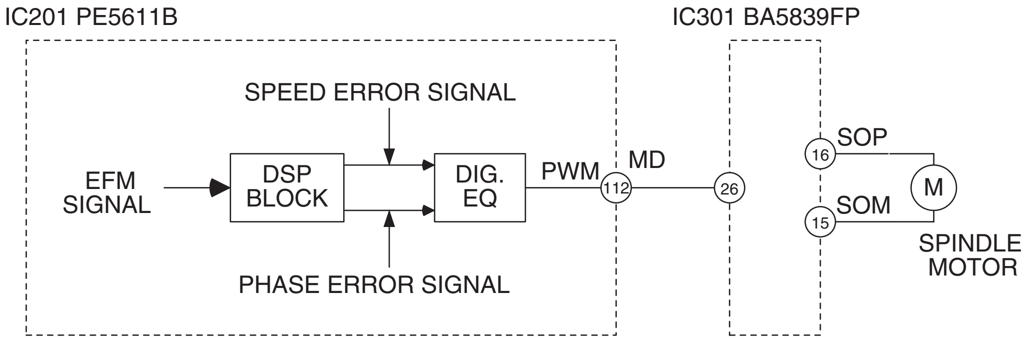


Fig.1.2.9 Block diagram of the spindle servo system

1.3 AUTOMATIC ADJUSTMENT FUNCTION

In this system, all the circuit adjustments are automated inside the CD of the LSI.
All adjustments are performed whenever a disc is inserted or the CD mode is selected by pressing the source key.
Details of each adjustment will be explained below.

1.3.1 TE, FE, and RF offset auto-adjustment

In this adjustment the TE, FE, and RF amplifier offsets of the preamplifier block in POWER ON are adjusted to the respective target values with the REFO as reference. (The target values for TE, FE, and RF offsets are 0 V, 0 V, and - 0.8 V, respectively.)

Adjusting procedure

1) The CPU of the LSI reads respective offsets through the CD of the LSI, when they are in LDOFF status.

2) The CPU of the LSI calculates the voltages for correction from the values read in 1), and substitutes the corrected values to prescribed places to adjust.

1.3.2 Tracking balance (T.BAL) auto-adjustment

This adjustment equalizes the output difference of the E-ch and F-ch from the pickup by changing the amplifier gain inside the CD of the LSI. In actual operation, adjustment is performed so that the TE waveform becomes symmetrical on each side of the REFO.

Adjusting procedure

1) After closing the focus loop,

2) Kick the lens in the radial direction to ensure the generation of the TE waveform.

3) The CPU of the LSI reads the offset amount of the TE signal calculated in the LSI at the time through the CD of the LSI.

4) The CPU of the LSI determines the offset amount is 0, positive, or negative.

- When the offset amount is 0, the adjustment is completed.
- When the offset amount is positive or negative, the amp gains for E-ch and F-ch should be changed, following a certain rule.

Then, steps 2) to 4) are repeated until the offset amount becomes 0 or the repetition reaches the limit number of times.

1.3.3 FE bias auto-adjustment

This adjustment is to maximizes the RFO level by optimizing the focus point during the play mode, utilizing the phase difference between the 3T level waveform of the RF waveform and that of when focus error disturbance is input. This adjustment is performed at the same timing as the auto-gain control, which will be described later, since disturbance is input to the focus loop.

Adjusting procedure

1) The CPU of the LSI issues the command to introduce disturbance to the focus loop (inside the CD of the servo LSI).

2) The waver of the 3T component of the RF signal is detected in the CD of the LSI.

3) The relation between the 3T component above and the disturbance is processed inside the CD of the LSI to detect the volume and direction of the focus offset.

4) The CPU of the LSI issues a command and reads out the detected results from the CD of the LSI.

5) The CPU of the LSI calculates the necessary correction and substitutes the result to the bias adjustment term inside the CD of the LSI.

Additionally, in this adjusting, a series of steps are repeated for better adjustment accuracy, the same as in the auto-gain control.

1.3.4 Focus and tracking AGC

This adjustment is to automatically adjust the focus and tracking servo loop gains.

Adjusting procedure

1) Introduce disturbance to the servo loop.

2) The error signals (FE and TE) when disturbance is introduced are extracted through the band pass filter, to obtain the G1 and G2 signals.

3) The CPU of the LSI reads the G1 and G2 signals through the CD of the LSI.

4) The CPU of the LSI calculates the necessary correction and performs the loop gain adjustment inside the CD of the LSI.

For increased adjustment accuracy, the same adjustment process is repeated a few times.

1.3.5 RF level auto-adjustment (RFAGC)

This adjustment is to adjust the dispersion of the RF level (RFO), which may be caused by mechanism or disc-related factors, to a steady value for reliable signal transmission. The adjustment is performed by changing the amp gain between RFO and RFAGC.

Adjusting procedure

1) The CPU of the LSI issues a command and reads out the output from the RF level detection circuit inside the CD of the LSI.

2) From the read values, the CPU of the LSI calculates the amp gain to change the RFO level to the target.

3) The CPU of the LSI sends a command to the CD of the LSI to adjust the amp gain to the level calculated in 2).

This adjustment is performed

1) when only the focus close operation is completed during the setup mode, and

2) immediately before the setup is completed (or when the play mode is about to start).

1.3.6 Adjustment of gains in preamplifier stage

In this adjustment, when reflected beams from the disc surface are extremely weak, such as when the lens is dirty, or a CD-RW is played, gains in the whole RFAMP block (FE, TE, and RF amplifiers) are increased by + 6 dB or + 12 dB, depending on the situation.

Adjusting procedure

When the system determines that the reflected beams from the disc surface are extremely weak during the setup mode, the whole RFAMP gains will be increased by + 6 dB or + 12 dB.

1.3.7 Initial values in adjustment

All automatic adjustments immediately after inserting a disc are performed based on the initial values. Automatic adjustments by source change or ACC ON are basically performed using the previous adjustment values as the initial values.

1.3.8 Coefficient display of adjustment results

For some of the adjustments (FE and RF offset, FZD cancel, F and T gains, and RFAGC), the adjustment results can be displayed and confirmed in the test mode.

The coefficient display in each auto adjustment is as follows:

1) FE and RF offset

Reference value = 32 (coefficient of 32 indicates that no adjustment is required)

The value is displayed in the unit of approximately 32 mV.

Ex. When the FE offset coefficient is 35,

35 - 32 = 3 x 32 mV = 96 mV

The correction is about +96 mV, which means the FE offset before adjustment is - 96 mV.

2) F and T gain adjustment

Reference value for focus and tracking = 20

The displayed coefficient / the reference value indicates the adjusted gain.

Ex. When the AGC coefficient is 40,

adjustment of 40 / 20 = 2 times (+ 6 dB) has been performed.

(It means that the original loop gain was half the target, and the whole gain was doubled to obtain the target value.)

3) RF level adjustment (RFAGC)

Reference value = 8

The coefficient of 9 to 15 indicates to increase the RF level

(for more gains).

The coefficient of 7 to 10 indicates to decrease the RF level

(for less gains).

When the coefficient changes by 1, the gain changes by 0.7 to 1 dB.

When the coefficient is 15, the gain is the maximum at TYP + 7.9 dB.

When the coefficient is 0, the gain is the minimum at TYP - 4.6 dB.

1.4 POWER SUPPLY AND LOADING BLOCK

For the power supply for this system, the VD (7.5 ± 0.5 V) and the VDD (3.3 ± 0.165 V), which are supplied from the motherboard, are used. The two power supplies, the VD mentioned above (for the drive system), and the VDD (for the LSI: 3.3 V), are used in this system.

The CPU of the LSI controls ON/OFF with "CONT", except for Load/Eject of the CD driver. For ON/OFF of the Loading drive, no particular control terminals are available, but the input signal "LOEJ" assumes an equivalent role. Also, the LCO output switches LOADING MODE and CARRIAGE MODE with "CLCONT".

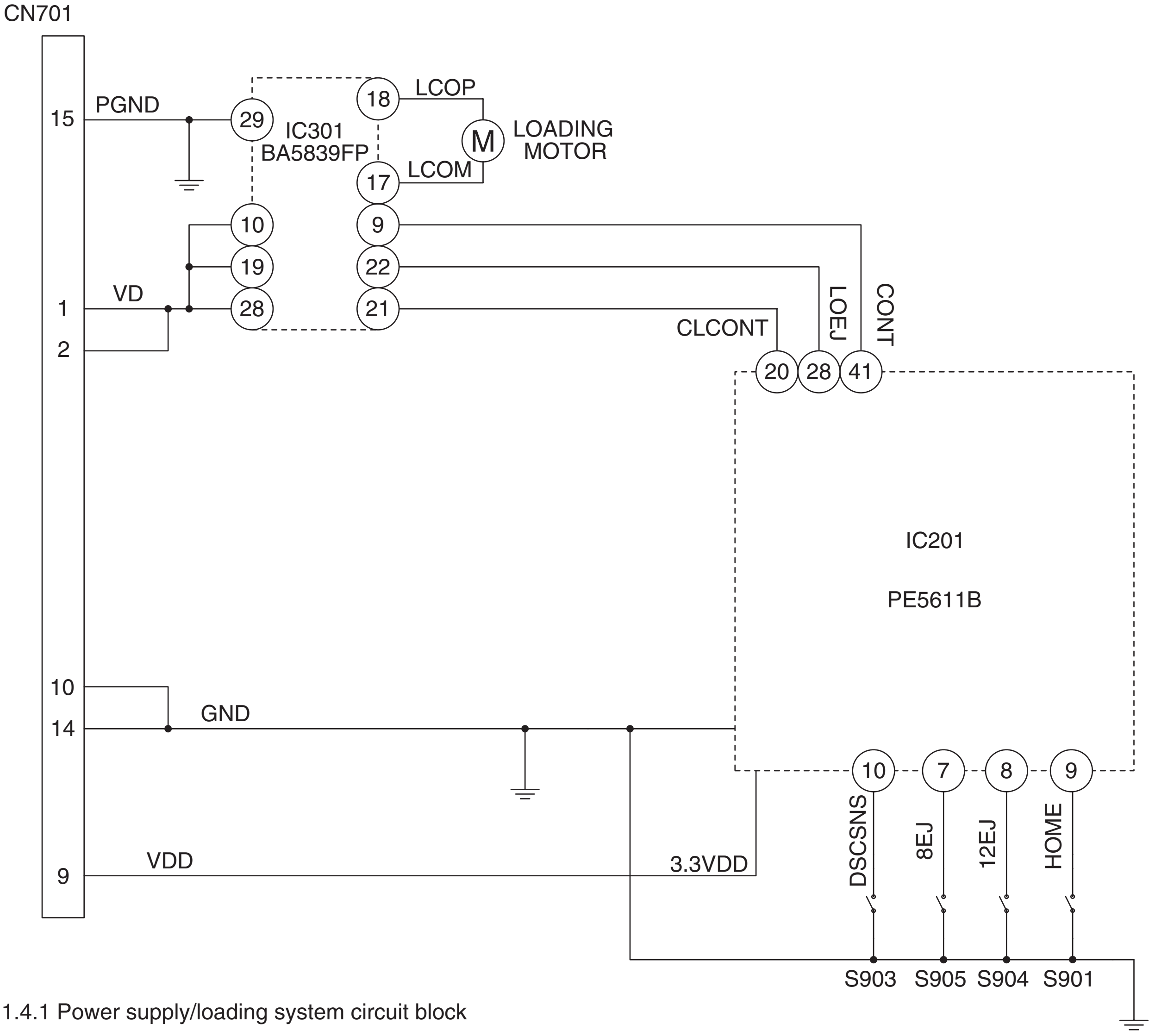

CN701
15
PGND
1
VD
2
10
14
GND
9
VDD
29
10
19
28
IC301
BA5839FP
18
LCOP
17
LCOM
M
LOADING MOTOR
9
22
21
CLCONT
LOEJ
CONT
20
28
41
IC201
PE5611B
3.3VDD
10
7
8
9
DSCSNS
8EJ
12EJ
HOME
S903
S905
S904
S901

Fig.1.4.1 Power supply/loading system circuit block

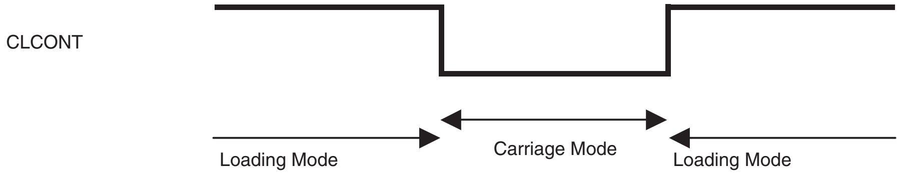

CLCONT
Loading Mode
Carriage Mode
Loading Mode

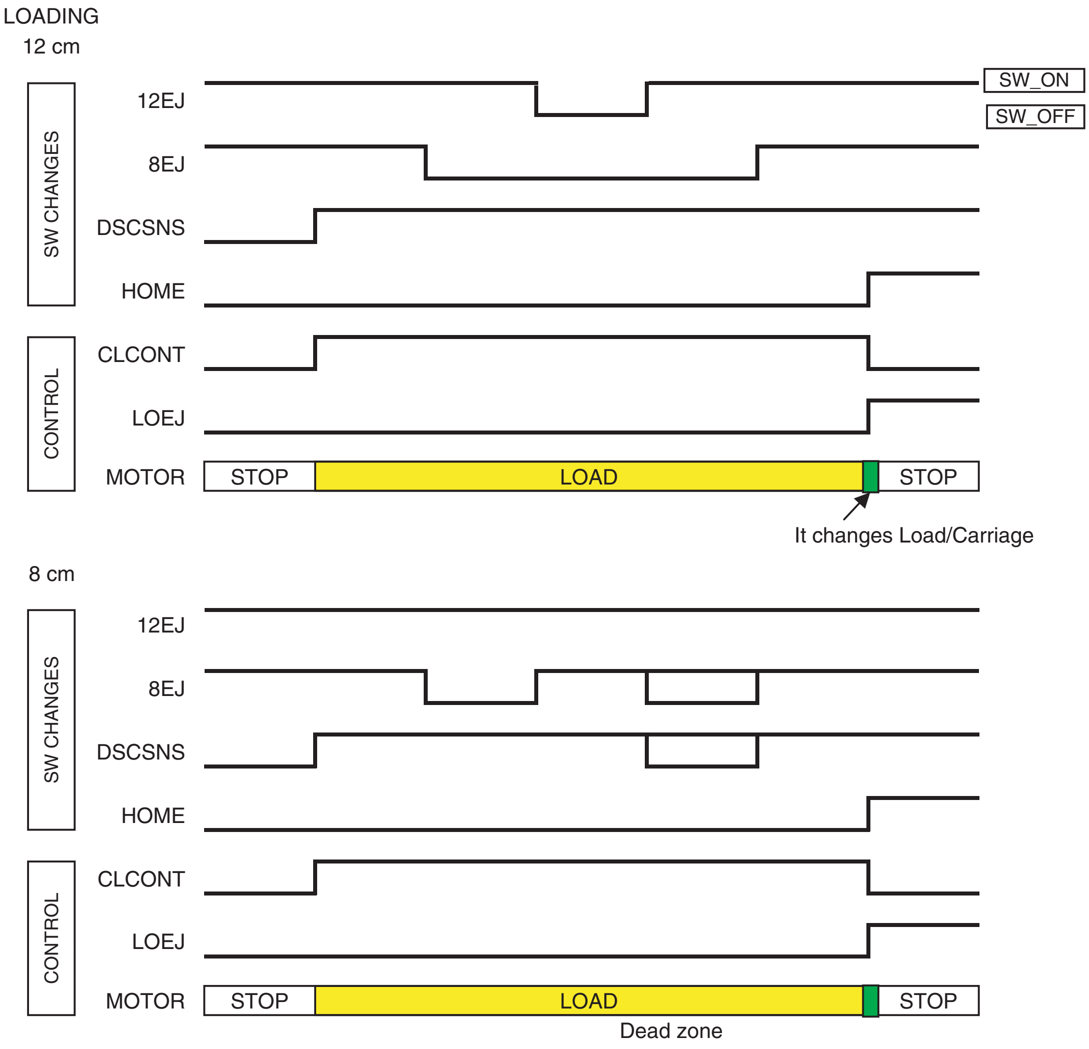
Fig.1.4.2 Loading/carriage mode shift

The load/eject operation is controlled with the status changes of the HOME switch (also used for clamp detection) on the mechanism unit and the three switches on the control unit. The ON/OFF statuses of these switches are respectively detected at the input port of the microcomputer.

Using the detection results in the microcomputer, each status (A to E) is determined. The disc size detection (8 or 12 cm) is also performed through this status change. Each status is shown in Fig.1.4.3 and the status change in Fig.1.4.4.

	Status	A	B	C	D	E
DSCSNS	SW1(S903)	OFF	ON	ON	ON	ON
8SW	SW2(S905)	ON	ON	OFF	OFF	ON
12SW	SW3(S904)	ON	ON	ON	OFF	ON
HOME	SW4(S901)	OFF	OFF	OFF	OFF	ON
	Mechanism state	With no disc	-	-	-	Clamp state

Fig.1.4.3 DSCSNS status


LOADING
12 cm
SW_ON
SW_OFF
SW CHANGES
12EJ
8EJ
DSCSNS
HOME
CONTROL
CLCONT
LOEJ
MOTOR
STOP
LOAD
STOP
It changes Load/Carriage
8 cm
SW CHANGES
12EJ
8EJ
DSCSNS
HOME
CONTROL
CLCONT
LOEJ
MOTOR
STOP
LOAD
STOP
Dead zone

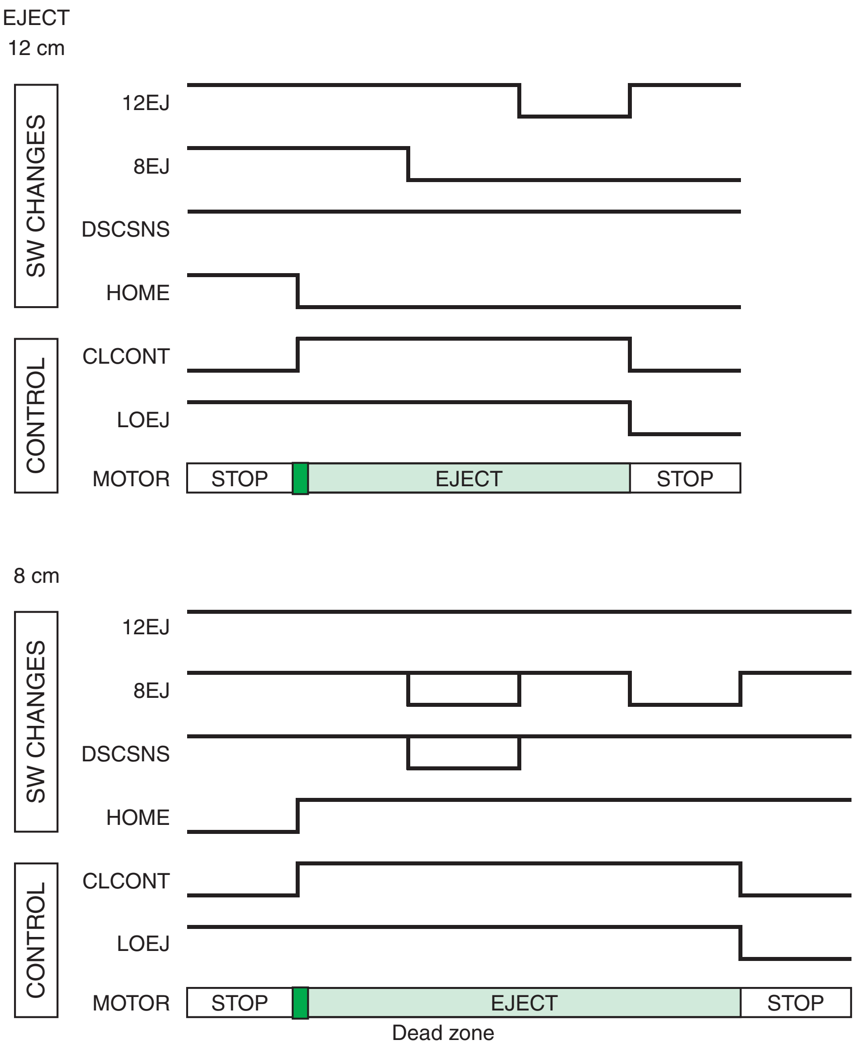

EJECT
12 cm
SW CHANGES
12EJ
8EJ
DSCSNS
HOME
CONTROL
CLCONT
LOEJ
MOTOR
STOP
EJECT
STOP
8 cm
SW CHANGES
12EJ
8EJ
DSCSNS
HOME
CONTROL
CLCONT
LOEJ
MOTOR
STOP
EJECT
STOP
Dead zone

Fig.1.4.4 Status change in LOAD and EJECT modes

1.5 USB BLOCK

1.5.1 Outline

This product has a built-in USB2.0FS host controller and reads the compressed audio data from USB memory, portable device (MSC) or iPod.
The read data is transmitted to the LSI CPU block via the bus bridge connected to the USB host and serial interface and then to the LSI CD block.

1.5.2 Block diagram of USB functions

The USB host controller implements control from the PCI bridge in bus bridge via the PCI bus.
Compressed audio data of Mass Storage class is loaded into the bus bridge in Bulk transfer from USB device using DP (USB data +) and DM (USB data -).
The bus bridge controls by microcontroller serial transfer, universal port and external interrupt.
Compressed audio data received in serial transfer is transferred to the audio DSP in LSI CD block via the LSI CPU block and is reproduced.

The functions of the USB host controller and bus bridge are described as follows:

[USB host controller]
- Loads the compressed audio data from the USB device connected to the USB connector.
- OpenHCI Specification Release 1.0a compliant
- Supports Full-Speed (12 Mbps) USB devices.
- Supports Mass Storage class and Bulk transfer.
- System clock: 48 MHz (with clock oscillation stopping function)
- PCI clock: pclk = 27 MHz

[Bus bridge]
- Bridge circuit to connect between the USB host controller and LSI CPU block
- Decodes the serial data and converts it for PCI bus.
- Converts the data from PCI bus to serial data.
- Transfers directly to the RAM in USB_HOST bridge.
- PCI clock: pclk = 27 MHz
- Serial clock: sclk = 8.467 MHz

The block diagram of USB functions are provided as follows:

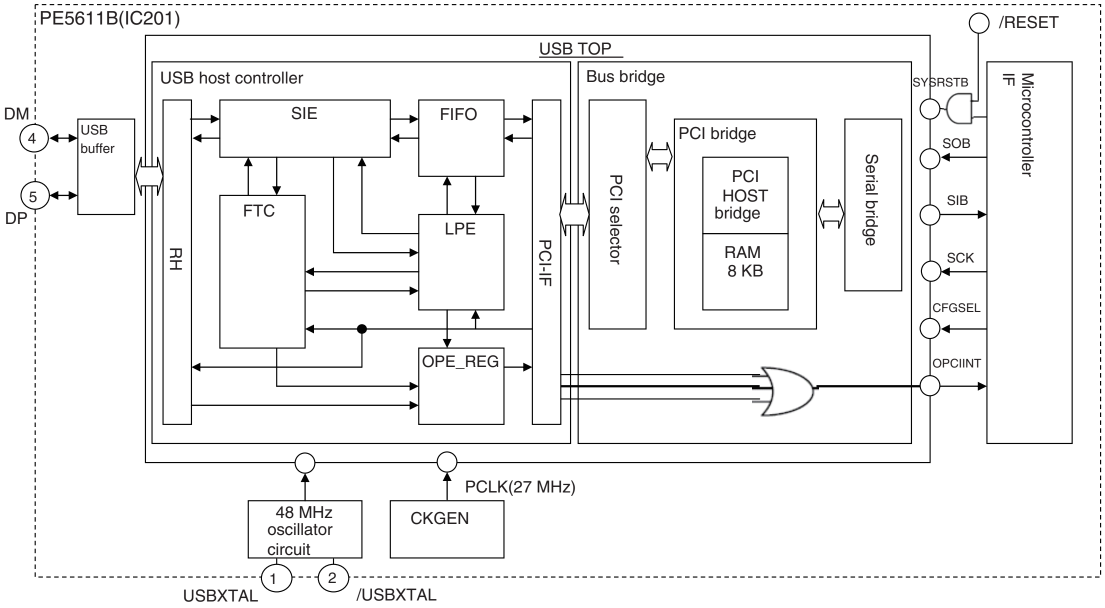

PE5611B(IC201)
/RESET
USB TOP
USB host controller
Bus bridge
SYSRSTB
Microcontroller IF
DM
4
USB buffer
5
DP
SIE
FIFO
FTC
LPE
RH
PCI-IF
OPE_REG
PCI selector
PCI bridge
PCI HOST bridge
RAM 8 KB
Serial bridge
SOB
SIB
SCK
CFGSEL
OPCIINT
PCLK(27 MHz)
48 MHz oscillator circuit
CKGEN
1
2
USBXTAL
/USBXTAL

Fig.1.5.1 Block diagram of USB functions

[Description of block diagram of USB functions]

<USB host controller>

PCI_IF: Module for communication between the internal circuits of Host and PCI bus
FIFO: FIFO module for asynchronism absorption between the USB clock and PCI clock
LPE: Module to implement USB list processing
SIE: Module to implement serial-parallel and parallel-serial conversion, CRC processing and bit stuffing process on USB transfer data
FTC: Module to implement frame control for USB
RH: Module with the role of RootHub for USB. Implements USB buffer control.

<Bus bridge>

A circuit to connect between the serial I/F of LSI CPU block and USB host controller
Serial bridge: Module to connect between the microcontroller and PCI HOST bridge
PCI HOST bridge: Module to connect between the PCI bus, memory bus and RAM bus
RAM 8 KB: 8 KB SRAM module
PCI selector: Module to connect between the USB host and PCI bus

<Microcontroller I/F> LSI CPU block

SYSRSTB: Reset signal for USB host and bus bridge
SIB: Signal for bus bridge serial data output and microcontroller serial data input
SOB: Signal for bus bridge serial data input and microcontroller serial data output
SCKB: Serial clock signal for bus bridge. Microcontroller is the master.
OPCIINT: USB-related interrupt output from the bus bridge
CFGSEL: Register/RAM access switching signal

- CKGEN
  Clock generator with multiplication PLL using the 16.934 4 MHz clock as the source
  Generates 27 MHz clock by dividing the clock obtained by multiplying 16.934 4 MHz with 8 by 5.
- USB buffer
  DP and DM buffer used in USB communication
- 48 MHz oscillation circuit
  The block that oscillates 48 MHz clock for the USB clock

1.5.3 Flow for audio output from the USB device

When a USB device is connected to the USB connector, the LSI (host controller) recognizes the device.
The host controller load the compressed audio data from the USB device connected to the USB connector.
The loaded compressed audio data is stored in the RAM on Bus Bridge.
The stored compressed audio data is loaded on LSI CPU block by serial transfer.
The compressed audio data by serial reception from CSI is transferred to the Buffer Controller in LSI CD block via LSI CPU block.
The data is stored in the built-in 1 Mbit SRAM by RAMPNT and is transferred to Audio DSP by PLYPNT.
The compressed audio data is decoded for each audio data and output to DAC I/F as audio data.
The digital audio data input from DAC I/F into Audio DAC is output as analog audio data.

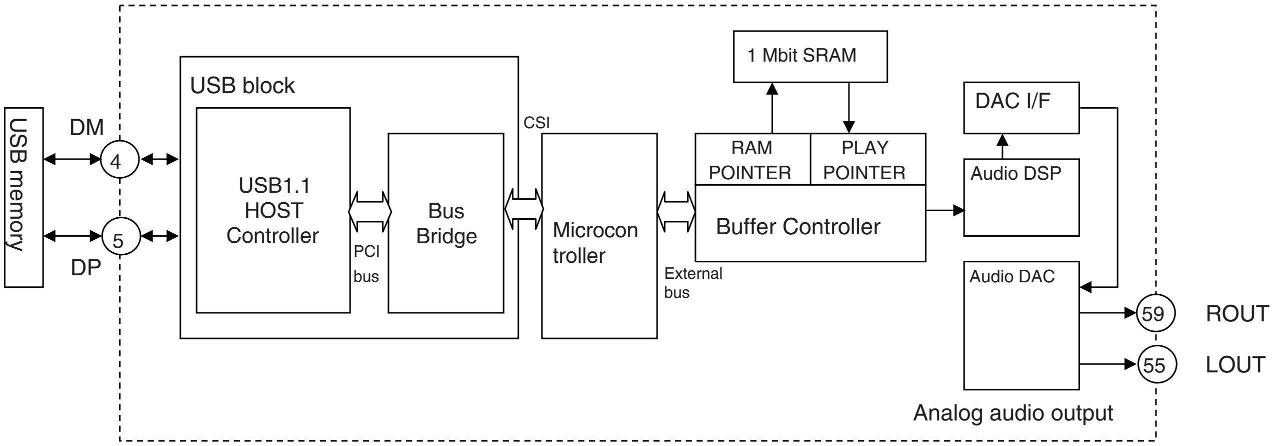


Fig.1.5.2 Flow for audio output from the USB device

1.6 ABOUT iPod FUNCTIONS(iPod MODELS ONLY)

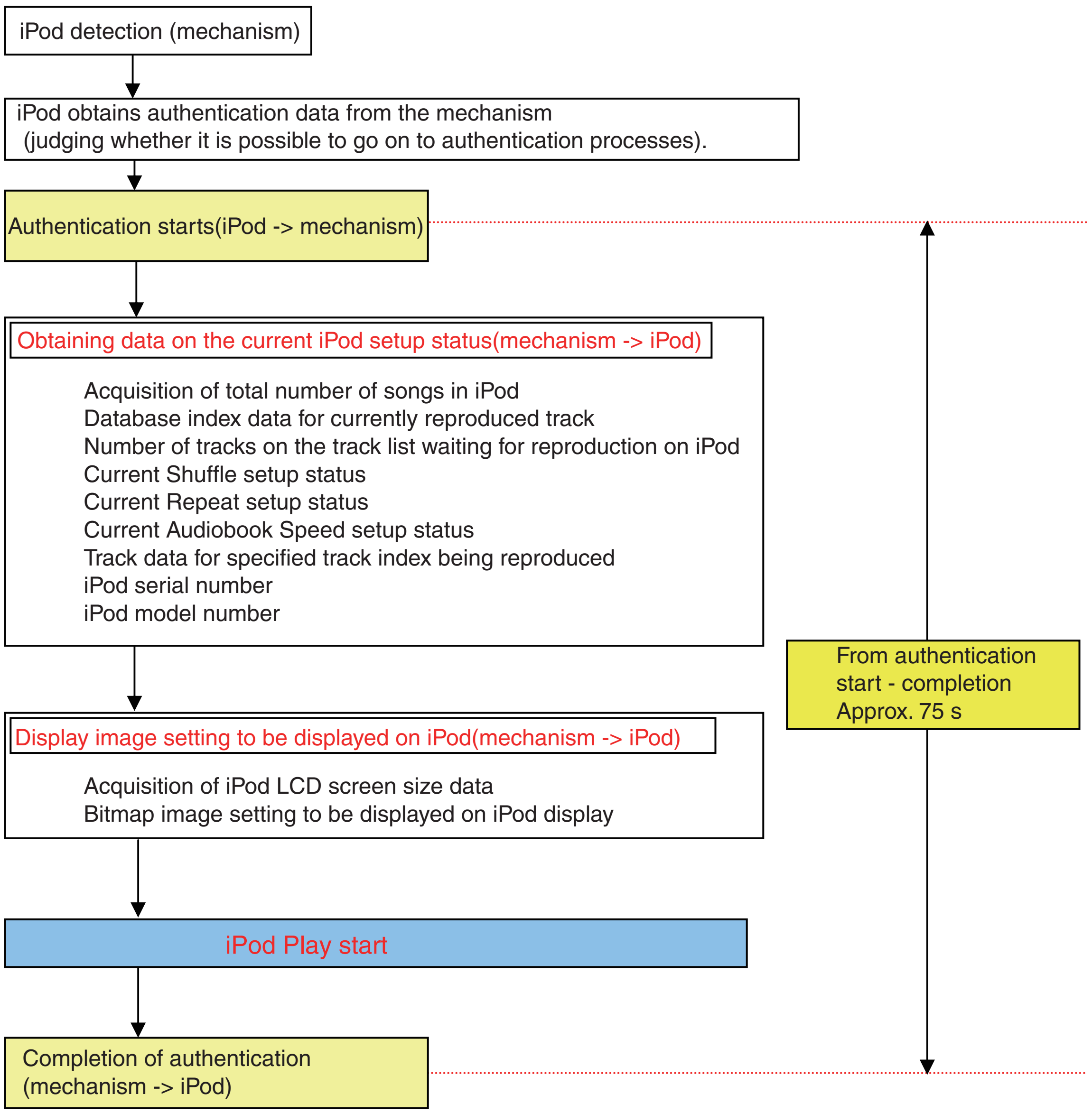
1.6.1 Outline

Unlike MSC devices, iPod executes all operations including PLAY/FF/REV and decoding of compressed file internally.
Digital audio data is transmitted to the mechanism through the USB block of LSI.
The mechanism will operate iPod by transmitting commands to iPod instead of file reproduction process and so forth.
Therefore the reproducible format and functions need to be compliant with iPod.
In addition, digital streaming may be impossible depending on the iPod generation and the firmware version.
These devices are handled as noncompliant devices and are not played.
iPod does not use the concept of folder configuration but access the category database.

1.6.2 iPod authentication flow

The flow from iPod detection to completion of authentication is shown as follows:

Flow for iPod detection - completion of authentication (authentication IC 2.0A)


iPod detection (mechanism)
iPod obtains authentication data from the mechanism
(judging whether it is possible to go on to authentication processes).
Authentication starts(iPod -> mechanism)
Obtaining data on the current iPod setup status(mechanism -> iPod)
Acquisition of total number of songs in iPod
Database index data for currently reproduced track
Number of tracks on the track list waiting for reproduction on iPod
Current Shuffle setup status
Current Repeat setup status
Current Audiobook Speed setup status
Track data for specified track index being reproduced
iPod serial number
iPod model number
From authentication start - completion Approx. 75 s
Display image setting to be displayed on iPod(mechanism -> iPod)
Acquisition of iPod LCD screen size data
Bitmap image setting to be displayed on iPod display
iPod Play start
Completion of authentication (mechanism -> iPod)

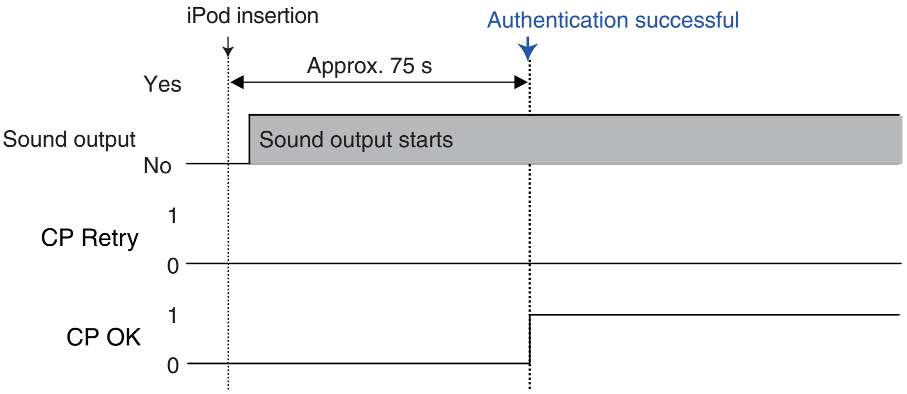
The status during iPod authentication is also provided as follows:

Authentication status when iPod is inserted

When iPod is inserted, authentication operation is executed between the CD mechanism (mounted with iPod authentication IC) and iPod.
Operation (status) by the CD mechanism and iPod in this case are shown as follows:

[When authentication is OK]

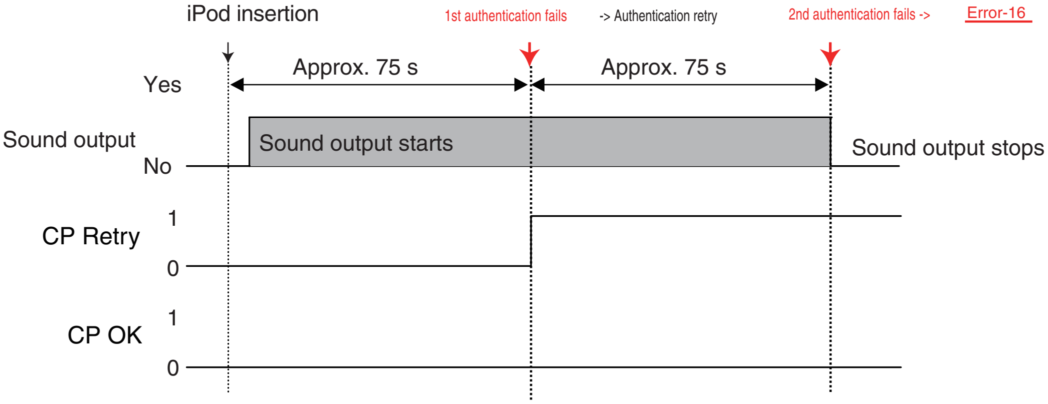
When authentication is successful in 1 try, sound output is continued (authentication OK).
When authentication fails in the 1st try and is successful in the 2nd try, sound output is continued (authentication OK).


iPod insertion
Authentication successful
Approx. 75 s
Yes
Sound output
No
Sound output starts
CP Retry
1
0
CP OK
1
0

* CP OK bit is set to "1" when authentication is successful.
* Since authentication is successful, CP Retry remains "0."

[When authentication is NG]

When authentication fails in the 1st try, the second authentication operation starts.
When authentication fails again in the 2nd try, ERR-16 (iPod authentication error) occurs and sound output is stopped (authentication NG).

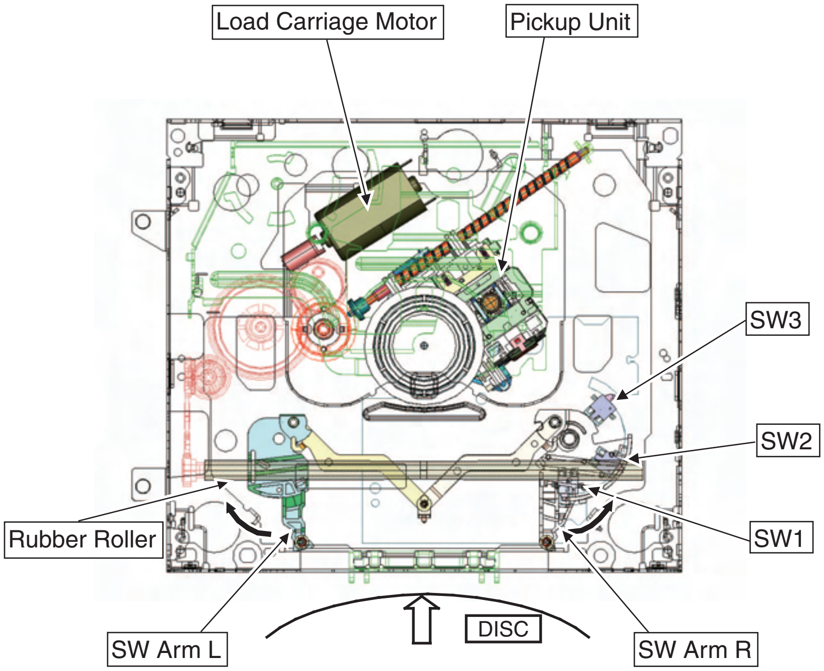

iPod insertion
1st authentication fails
-> Authentication retry
2nd authentication fails ->
Error-16
Approx. 75 s
Approx. 75 s
Yes
Sound output
No
Sound output starts
Sound output stops
CP Retry
1
0
CP OK
1
0

* When authentication retry starts, CP Retry bit is set to "1."
* Since authentication failed, CP Retry remains "0."
* Since authentication failed, Error-16 is generated and sound output is stopped.

2. MECHANISM DESCRIPTIONS

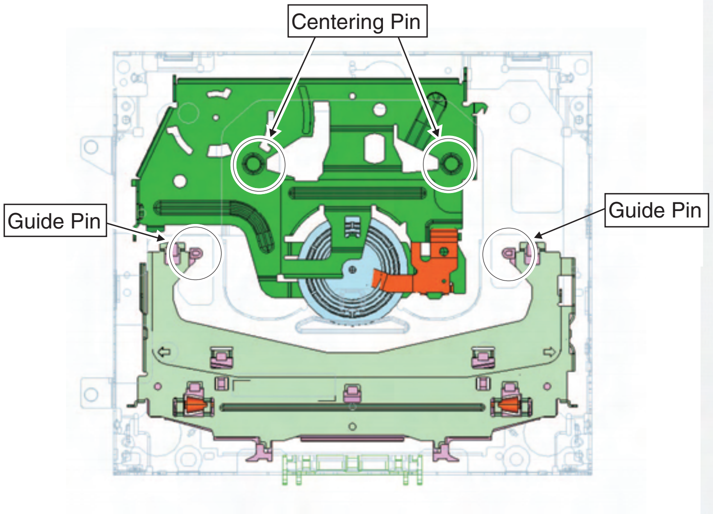
● Loading actions

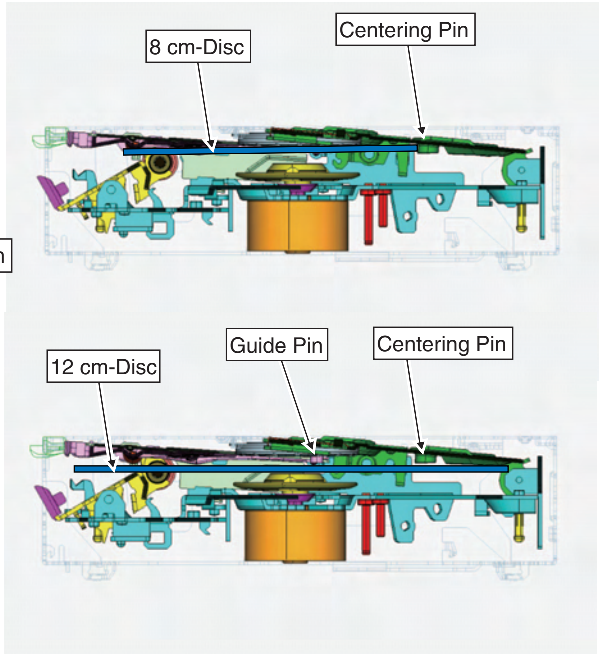
1. When a disc is inserted, SW Arm L and R rotate and SW1 is switched from ON to OFF.
   When SW1 is switched from ON to OFF, the Load Carriage Motor is started and the rubber roller rotates.
2. If the disc is a 12 cm-disc, SW3 is turned ON with SW Arm, and the microcomputer determines that the disc is a 12 cm-disc.
3. In case of an 8 cm-disc, SW3 is not turned ON, a clamp action is triggered, and the microcomputer determines that the disc is an 8 cm-disc.
   (The left and right of SW Arm are coupled, and when only one side is pushed, the coupled joint will lock, and the arms will not open more than a certain width (SW3 will not be turned ON).)


Load Carriage Motor
Pickup Unit
SW3
SW2
SW1
Rubber Roller
SW Arm L
DISC
SW Arm R

● Disc centering mechanism

1. 8 cm-disc is centered by the Guide Pins and the Centering Pins.
2. 12 cm-disc passes under the Guide Pins and the Centering Pins, and centered in the back position of the mechanism.


Centering Pin
Guide Pin
Guide Pin


8 cm-Disc
Centering Pin
12 cm-Disc
Guide Pin
Centering Pin

● Clamp actions mechanism

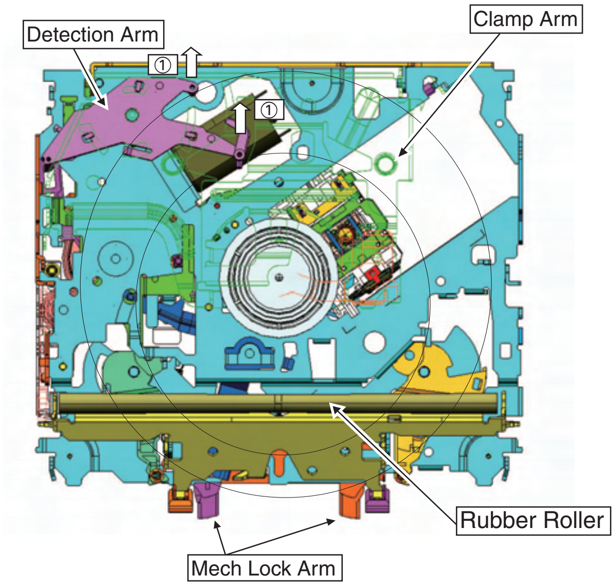
1. With an 8 or 12 cm-disc centered on the spindle, the Detection Arm is moved.
2. The movement of the Detection Arm engages the Loading Rack with the 2-Stage Gear.
3. The Clamp Lever slides and lowers the Clamp Arm (the disc is clamped).

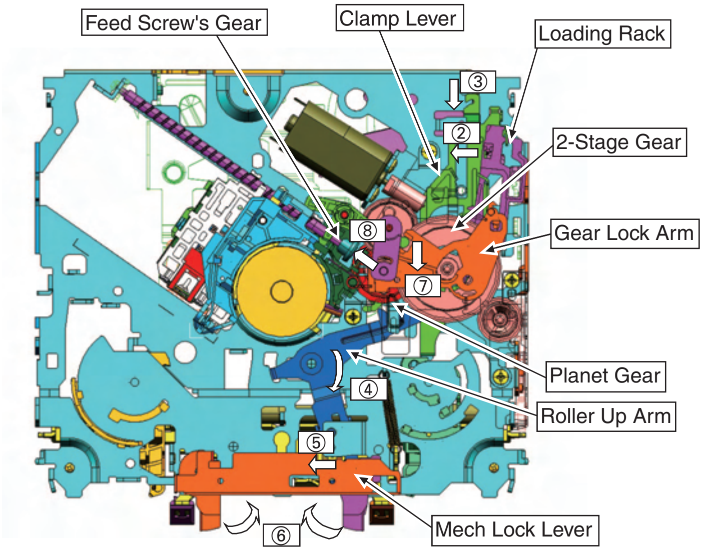
At the same time, the Roller Up Arm is rotated, and the Rubber Roller is separated from the disc.

Also the arm slides the Mechanical Lock Lever, turns the Mechanical Lock Arm, and releases the mechanical lock, completing the clamp operation.

4. When the clamp action is completed, the Clamp Lever rotates the Gear Lock Arm.

When the arm is rotated, the Planet Gear is separated from the 2-Stage Gear and engaged with the gear of the pickup feed screw, and the carriage operation will start


Detection Arm
①
①
Clamp Arm
Rubber Roller
Mech Lock Arm


Feed Screw's Gear
Clamp Lever
Loading Rack
③
②
2-Stage Gear
⑧
Gear Lock Arm
⑦
Planet Gear
④
Roller Up Arm
⑤
⑥
Mech Lock Lever

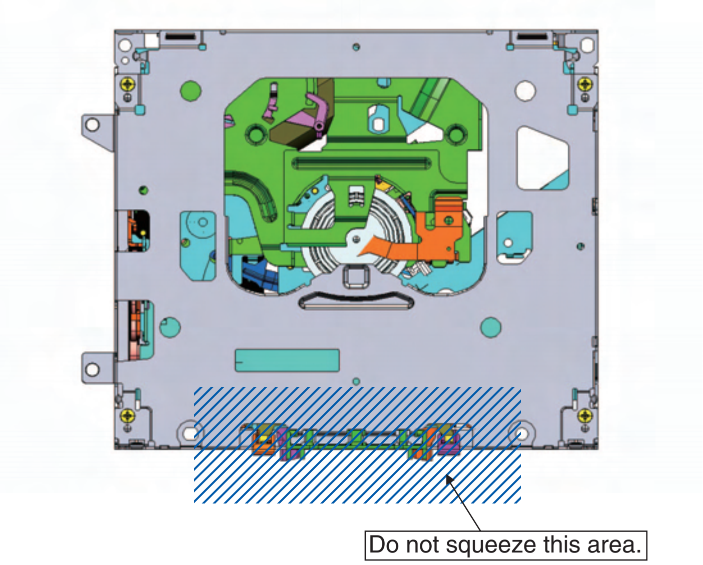
● Eject actions

1. When the Load Carriage Motor is rotated backward, and the pickup is fed to the inner periphery passing the home SW ON point, the eject action will start in the reverse order of the procedure mentioned earlier.
2. For a 12 cm-disc, Eject is completed when SW3 is switched OFF, ON, and OFF again.
3. For an 8 cm-disc, Eject is completed when SW2 is switched OFF, ON, and OFF again.

3. DISASSEMBLY

● How to hold the Mechanism Unit

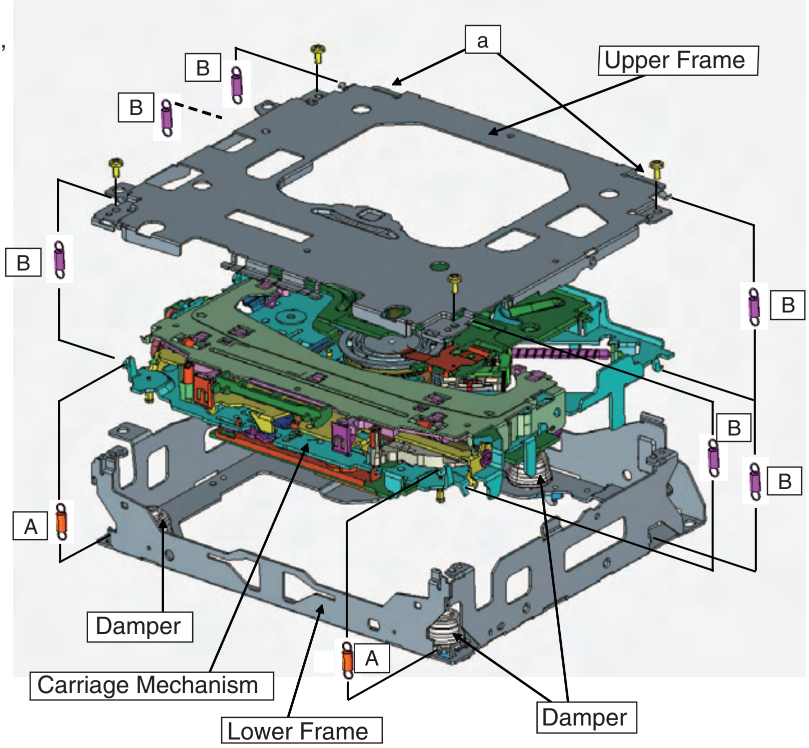
1. Hold the Upper and Lower Frames.
2. Do not hold the front portion of the Upper Frame, because it is not very solid.


Do not squeeze this area.

● Removing the Upper and Lower Frames

1. With a disc inserted and clamped in the mechanism, remove the two Springs (A), the six Springs (B), and the four Screws.
2. Turn the Upper Frame using the part "a" as a pivot, and remove the Upper Frame.
3. While lifting the Carriage Mechanism, remove it from the three Dampers.

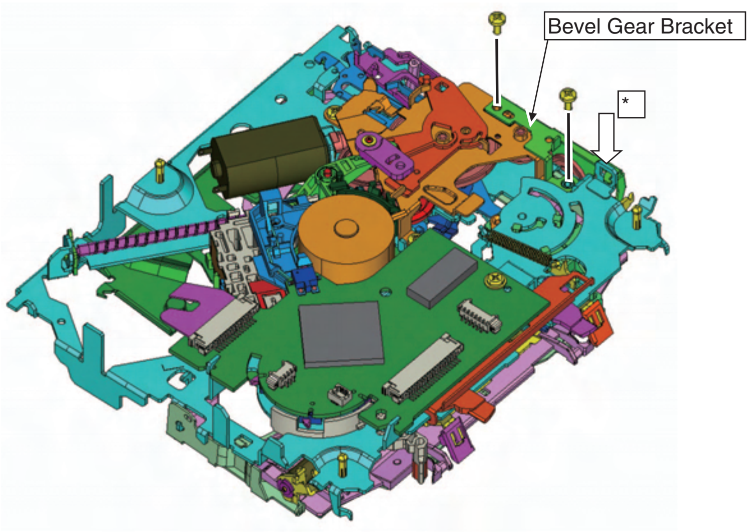
Caution: When assembling, be sure to apply some alcohol to the Dampers and assemble the mechanism in a clamped state.

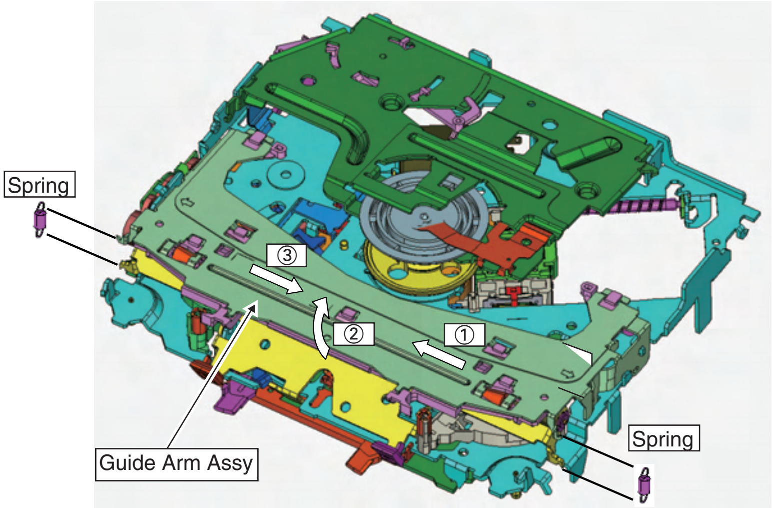

a
Upper Frame
B
B
B
B
B
B
A
A
Damper
Carriage Mechanism
Lower Frame
Damper

● Removing the Guide Arm Assy

1. Remove the Upper and Lower Frames and set the mechanism to the eject mode.
2. Remove the two Screws and Bevel Gear Bracket. (Note that the gears will come off.)
3. Remove the two Springs from the left and right sides.
4. Slide the Guide Arm Assy to the left, and turn it upward.
5. When it is turned about 45 degrees, slide it to the right and remove.

Caution: When assembling, assemble with the Bevel Gear Bracket moved to the direction of the arrow (*).

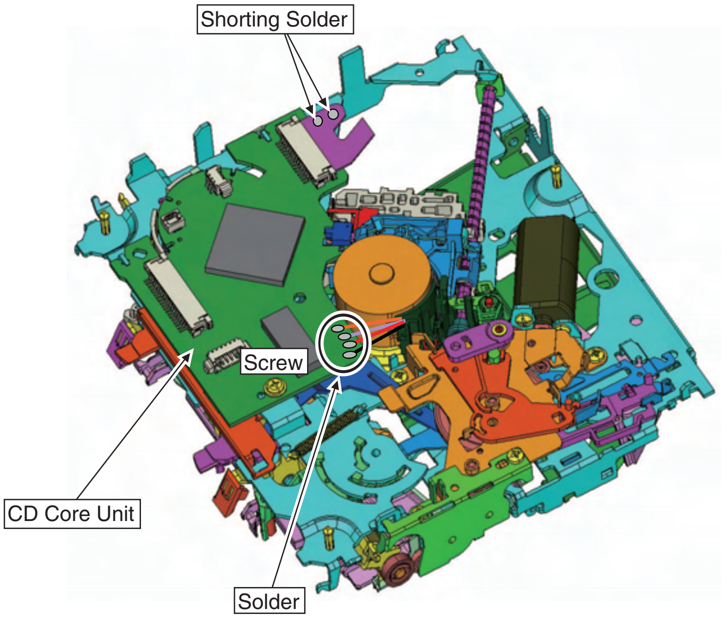




● How to remove the CD Core Unit

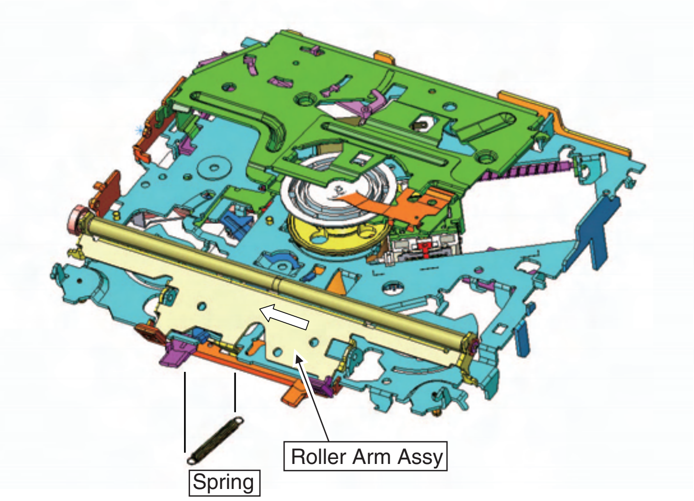
1. Apply Shorting Solder to the flexible cable of the Pickup, and disconnect it from the connector.
2. Unsolder the four leads, and loosen the Screw.
3. Remove the CD Core Unit.

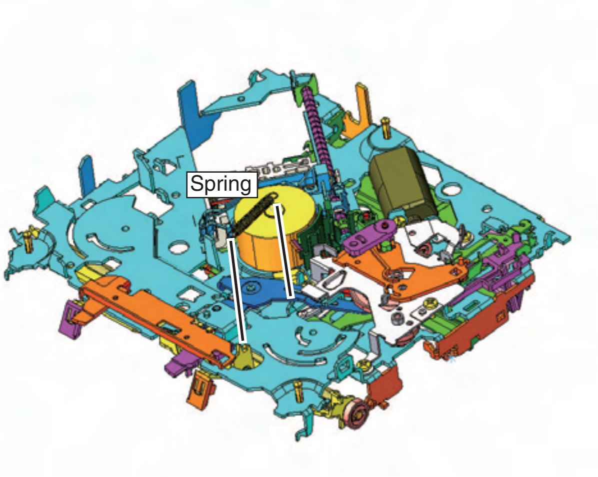
Caution: When assembling the CD Core Unit, assemble it with the SW in a clamped state so as not to damage it.


Shorting Solder
Screw
CD Core Unit
Solder

● How to remove the Roller Arm Assy

1. Remove the Guide Arm Assy.
2. Remove the CD Core Unit. (If the Spring can be removed, the unit need not be removed, depending on the type of CD Core Unit.)
3. Remove the Spring.
4. Slide the Roller Arm Assy to the left.


Spring
Roller Arm Assy

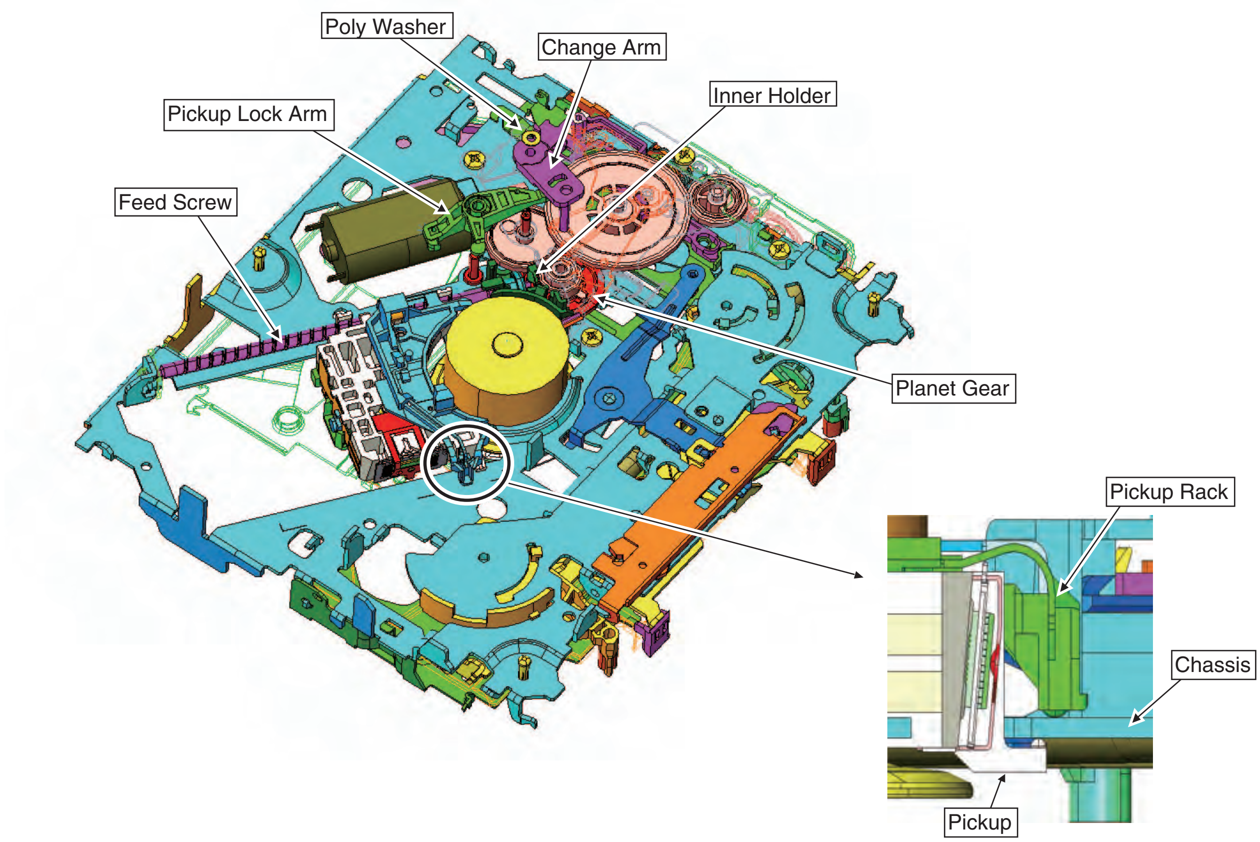


● How to remove the Pickup Unit

1. Make the system in the carriage mechanism mode, and have it clamped.
2. Remove the CD Core Unit and remove the leads from the Inner Holder.
3. Remove the Poly Washer, Change Arm, and Pickup Lock Arm.
4. While releasing from the hook of the Inner Holder, lift the end of the Feed Screw.

Caution: When assembling, move the Planet Gear to the load/eject position before setting the Feed Screw in the Inner Holder.

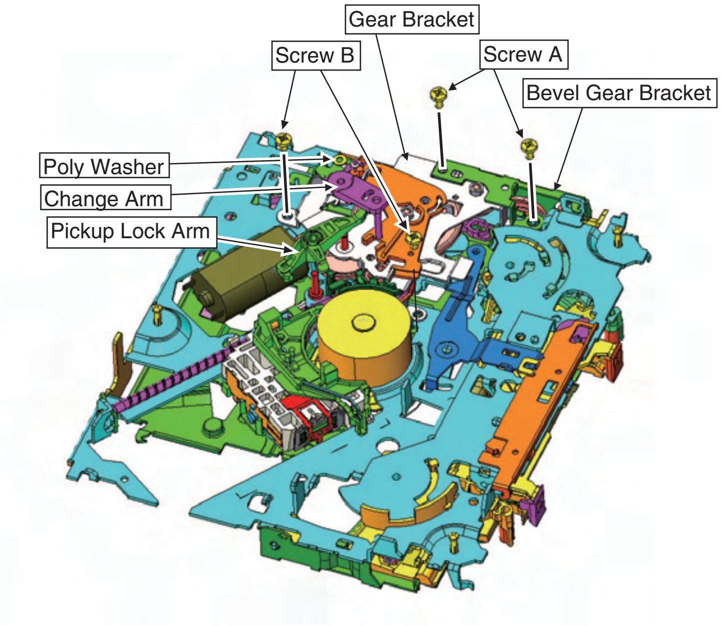
Assemble the sub unit side of the Pickup, taking the plate (Chassis) in-between. When treating the leads of the Load Carriage Motor Assy, do not make them loose over the Feed Screw.

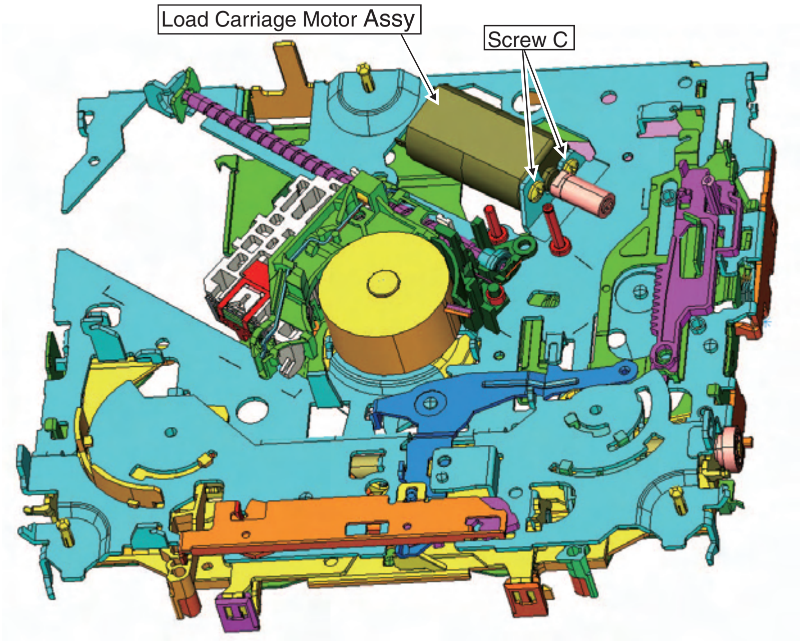

Poly Washer
Change Arm
Inner Holder
Pickup Lock Arm
Feed Screw
Planet Gear
Pickup Rack
Chassis
Pickup

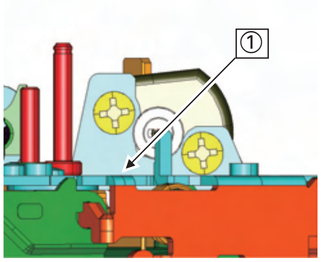
● How to remove the Load Carriage Motor Assy

1. Make the system in the carriage mechanism mode, and have it clamped.
2. Release the leads (orange and purple) of Load Carriage Motor Assy from the CD Core Unit and remove the holder.
3. Remove the Poly Washer, Change Arm, and Pickup Lock Arm.
4. Remove the two Screws (A) and the Bevel Gear Bracket (Note that the gears will come off).
5. Remove the two Screws (B) and the Gear Bracket (remove the CD Core Unit, if necessary), and remove all the gears.
6. Remove the two Screws (C) and the Load Carriage Motor Assy.

Caution: When assembling the Load Carriage Motor Assy, move it to the direction shown in the illustration (①).
When treating the leads of the Load Carriage Motor Assy, do not make them loose over the Feed Screw.


Gear Bracket
Screw B
Screw A
Bevel Gear Bracket
Poly Washer
Change Arm
Pickup Lock Arm

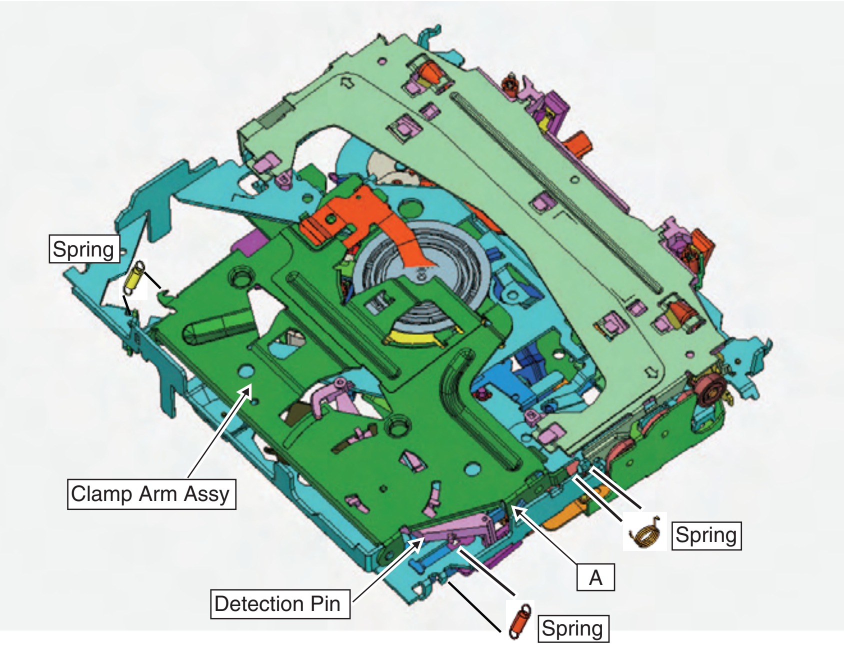

Load Carriage Motor Assy
Screw C

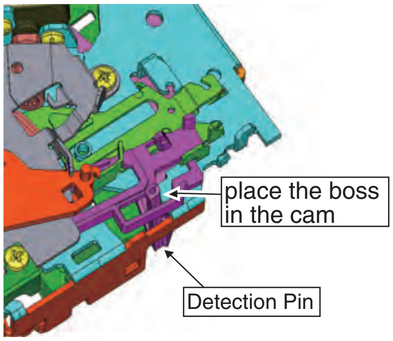


● How to remove the Clamp Arm Assy

1. Make the system in the carriage mechanism mode, and set the mechanism to the eject mode.
2. Remove the three Springs.
3. While pressing the position A, turn the Clamp Arm Assy upward, slide it to the left, and remove.

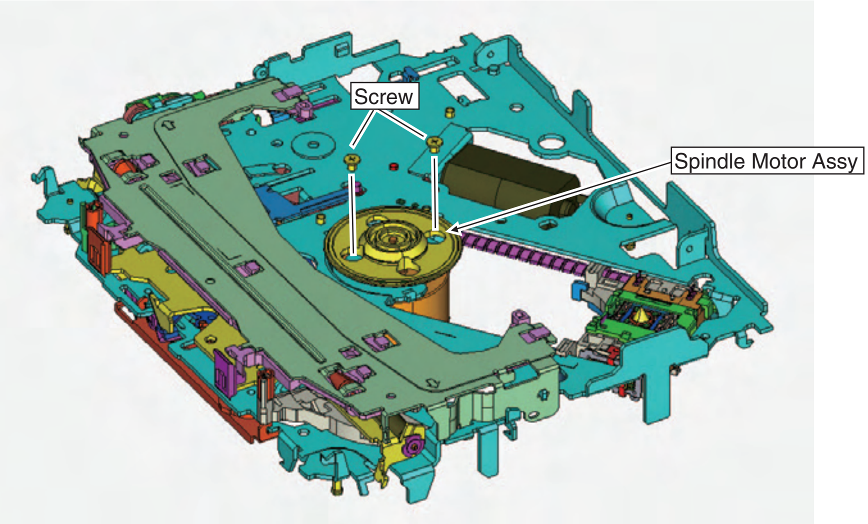
Caution: When assembling, place the boss of the Detection Pin in the cam unit of the Loading Rack.


Spring
Clamp Arm Assy
Spring
A
Detection Pin
Spring


place the boss
in the cam
Detection Pin

● How to remove the Spindle Motor Assy

1. Make the system in the carriage mechanism mode, and have it clamped.
2. Remove the CD Core Unit and remove the leads from the Inner Holder.
3. Set the mechanism to the eject mode and remove the Clamp Arm Assy.
4. Set the mechanism to the clamped and move the Pickup to circumference.
5. Remove the two Screws, and remove the Spindle Motor Assy.


Screw
Spindle Motor Assy